



Nova Scotia

ANNUAL REPORT

*for the fiscal year
ending March 31, 1986*

Department of
Lands and Forests



**REPORT OF THE
MINISTER OF LANDS AND FORESTS**

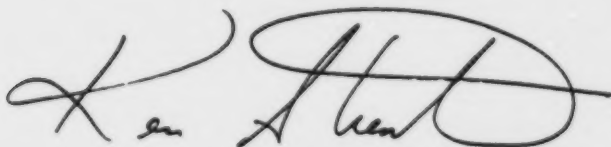
To His Honour

The Honourable Alan R. Abraham, C.D.
Lieutenant-Governor of Nova Scotia

May It Please Your Honour:

I have the honour to submit herewith the report of the Department of
Lands and Forests for the fiscal year ended March 31, 1986.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Ken Streach'. The signature is fluid and cursive, with a large loop at the end.

**Ken Streach
MINISTER OF LANDS AND FORESTS**



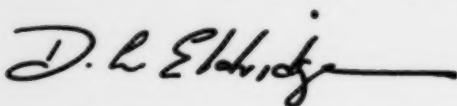
**REPORT OF THE
DEPARTMENT OF LANDS AND FORESTS**

The Honourable Ken Streach
Minister of Lands and Forests
Halifax, Nova Scotia

Sir:

I have the honour of presenting the Report of the Department of
Lands and Forests for the fiscal year ended March 31, 1986.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'D.L. Eldridge', followed by a long horizontal flourish line.

D.L. Eldridge
DEPUTY MINISTER



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DEPARTMENT OF LANDS AND FORESTS

P.O. Box 698

Halifax, Nova Scotia

B3J 2T9

MINISTER

Hon. Ken Streatch

424-4037

DEPUTY MINISTER

D.L. Eldridge

424-4121

DEPARTMENTAL FUNCTION AND ORGANIZATION

The Department of Lands and Forests was established by legislation enacted in 1926. It is charged with administering the Lands and Forests Act and various other statutes, including the Beaches Preservation and Protection Act and the Provincial Parks Act.

From these Acts it derives authority to manage Crown lands, to provide a system of parks, and to protect the forests, wildlife, and beaches. Inherent in the legislation and incumbent upon the departments are responsibilities pertaining to the productivity of the forests generally, the implementation of forest management programs, the supply of forest products, public education, and the enhancement of recreational and scenic values. The department also assists federal agencies in enforcing the Migratory Birds Convention Act.

The functions and activities of the department are carried out through four branches: Administration, Operations, Program Planning, and Land Services. This structure is shown in Figure 1. Unless otherwise indicated, functions are located in Halifax (P.O. Box 698, Halifax, Nova Scotia B3J 2T9). The department is well decentralized with staff and facilities located in all municipalities (Figure 2).

BOARDS, COMMISSION, AND AGENCIES

NOVA SCOTIA FOREST PRACTICES IMPROVEMENT BOARD

Suite 210

Queen Square

45 Alderney Drive

Dartmouth, N.S.

(424-5443)

This board administers the Forest Improvement Act, which includes carrying out programs of education for good forest practices, recommending cutting practices, and generally using its authority to encourage better forest management practices.

NOVA SCOTIA PULPWOOD MARKETING BOARD

Suite 210

Queen Square

45 Alderney Drive

Dartmouth, N.S.

(424)7598)

This board is responsible for administering the Pulpwood Marketing Act. The purpose is to regulate the marketing of pulpwood on behalf of producers and buyers in the province.

FOREST POLICY AND LEGISLATION

On February 3, 1986, the Minister of Lands and Forests released a policy statement entitled *Forestry: A New Policy for Nova Scotia*. This new policy, which will be implemented by new legislation presented during the 1986 sitting of the Legislature, addresses the key issues highlighted in the report of the 1982-84 Royal Commission on Forestry. The new policy also reflects extensive consultation by the Minister with various groups and individuals following the release of the Royal Commission report. The initial reaction in the province has been very favourable.

ACTS ADMINISTERED BY THE DEPARTMENT OF LANDS AND FORESTS

1. Beaches and Foreshores Act
2. Beaches Preservation and Protection Act
3. Blueberry Associations Act
4. Bowaters Mersey Agreement Act
5. Forest Improvement Act
6. Halifax Power and Pulp Company Limited Agreement Act
7. Indian Lands Act
8. Kedgemakooge National Park Act
9. Land Holdings Disclosure Act
10. Land Titles Clarification Act
11. Lands and Forests Act
12. Nova Scotia Land Surveyors Act
13. Nova Scotia Pulp Limited Agreement Act
14. Parks Development Act
15. Provincial Parks Act
16. Pulpwood Marketing Act
17. Scales Act
18. Scott Maritimes Pulp Limited Agreement Act
19. Surveys Act (not proclaimed)
20. Trails Act (not proclaimed)

ADMINISTRATION BRANCH

The Administration Branch is responsible for financial management, personnel administration, and air services, as well as for implementing administrative policies and procedures on behalf of the minister and deputy minister. It is composed of three divisions: Financial Management, Personnel Administration, and Air Services.

FINANCIAL MANAGEMENT

The Financial Management Division develops financial systems and procedures and provides financial information to all branches of the department and control agencies of government. They assist in the preparation of the departmental expenditure estimates and prepare the revenue budget. They also manage and process departmental accounts payable, administer the collection of revenue and are responsible for the distribution and sale of game and fishing licenses.

**Expenditures and Revenues
1985-86****ORDINARY EXPENDITURES****Administration Branch**

Office of Minister and Deputy	\$ 455,698	
Administrative Services	97,003	
Financial Management	671,605	
Game Licenses	266,407	
Personnel and Payroll	112,430	
Legal Services	78,822	
Air Services	2,264,838	
Grants and Assistance	124,255	
Forest Operators Assistance	875,000	
Forest Practices Improvement Board	<u>9,113</u>	\$4,955,171

Program Planning Branch**Administration**

Branch Administration	\$ 237,567
Urban Forestry	99,564
Forest Resources Education	333,029

Reforestation and Silviculture

Division Administration	207,569
Forest Nurseries	1,432,966
Silviculture Training	179,857
Tree Breeding	374,937
Insect and Pathogens Protection	1,327,723

Forest Resource Planning & Mensuration

Administration and Services	447,961
Resource Management Planning and Co-ordination	386,910
Forest Inventory	617,213
Timber Loan Board	32,388
Scaling	38,923

Wildlife

Wildlife Management Planning	589,462
Inland Fisheries	196,692
Wildlife Parks	<u>617,056</u>
	\$7,119,817

Operations Branch**Administration**

Administration	\$ 507,918
Silviculture Agreements	361,894

Field Services

Administration	2,351,431
Forest Protection	2,338,143
Enforcement and Hunter Safety	647,921
Parks Maintenance and Operation	1,193,681
Extension and Training	66,567
Private Land Forest Management	1,159,502
Wildlife Management	437,586
Crown Land Forest Management	1,791,097
Properties, Vehicles, and Equipment	976,428

Provincial Depot		
Administration	170,018	
Fire Control	628,925	
Mechanical Equipment	614,801	
Support Services	274,405	
Radio Communications	<u>616,487</u>	\$14,136,804

Land Services Branch

Administration	\$ 77,050	
Land Acquisition and Registry Division	537,148	
Surveys Division	1,005,491	
Provincial Crown Lands Record Centre	<u>233,931</u>	\$ 1,853,620
TOTAL		\$28,065,412
Forest Resource Development Agreement ¹	\$ 3,324,571	
Forest Renewal Agreement ¹	<u>3,289,529</u>	
		<u>\$34,679,512</u>

Ordinary Recovery Detail

Program Planning		
Forest Resources Education	\$ 1,327	
Insect and Pathogens Protection	<u>164,616</u>	\$ 165,943

¹ Funds budgeted in the Department of Development

CAPITAL EXPENDITURE**Furniture and Equipment**

Office	\$ 24,775	
Firefighting Equipment	205,846	
Forestry Equipment	<u>278,764</u>	\$ 509,385

Other

Program Planning		
Parks and Recreation	\$2,270,410	
Forest Research	<u>469,679</u>	
Operations		
Operational Silviculture	376,702	
Crown Land Access Roads	<u>172,965</u>	
Land Services		
Land Acquisition	1,149,617	
Surveys	<u>1,368,420</u>	\$5,807,793

Forest Resource Development Agreement ¹		\$1,448,209
Forest Renewal Agreement ¹		<u>658,062</u>

TOTAL		<u><u>\$8,423,449</u></u>
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1. Funds budgeted in the Department of Development

REVENUE

Admission Fees—Campgrounds	\$ 228,160	
Fines and Forfeitures	88,206	
Game and Fishing Licenses	2,456,482	
Leases and Grants	45,122	
Nursery—Sale of Trees	485,069	
Selective Cutting	327,287	
Timber and Fuelwood Licenses	1,938,273	
Miscellaneous	<u>262,205</u>	<u><u>\$5,830,804</u></u>

PERSONNEL ADMINISTRATION

The Personnel Administration Division is responsible for personnel and payroll documentation; recruitment and selection; staff training and development; administration of casual rates of pay; employee counselling and grievances; and other personnel matters.

The number of civil-service positions increased slightly over the years through the continued conversion of long-term casual employees to permanent civil-service status. During the year, 125-1,000 casual employees were on staff, depending upon the season, to assist in full-time programs of the department, to staff regular seasonal programs and to participate in employment-creation programs.

The year saw the retirement of John MacLellan, Investigator, Crown Land Claims in Inverside; Herbert Naugler, Foreman at the Moser River fish-rearing pond; and Ralph Hale, Manager, Forest Resources in Antigonish, all under the regular retirement plan. The following employees also retired at the end of March 1986 under the early incentive retirement plan: Eugene Beaver, Rearing Pond Attendant at Moser River; Myron Winters, Supervisor, Mechanical Section, Shubenacadie Depot; Selby Rogerson, Cook, Shubenacadie Depot; Lloyd Gilby, Equipment Operator, Shubenacadie Depot; Malcolm Mood, Maintenance Worker in Kemptville; Arthur Sweeney, Sanctuary Warden in Yarmouth; and Donald Wright, Supervisor, Production Surveys in Truro. The department was saddened by the death of Robert Lively, Field Assistant, Surveys in Guysborough, in June 1985.

AIR SERVICES

An air service is operated and maintained by the department for forest fire detection and suppression, aerial support in emergency situations, resource development and management, and transport of government personnel. It also assists in policing game violations and other related work.

The fleet consists of four helicopters and three fixed-wing aircraft. All helicopters and one fixed-wing aircraft are equipped for water bombing.

During the year the department's helicopters and fixed-wing aircraft flew a total of 301.7 hours on fire patrol and water-bombing missions. The air service was called on by Emergency Measures Organization (EMO) to carry out 29 searches for missing persons. Flying time for EMO amounted to 93.8 hours. The service also carried out nine air-ambulance missions.

WOOD SALVAGE/STORAGE AGREEMENT

During the fiscal year the department sold 39,961 cords (144 842 m³ [stacked] (bark-on basis scale) of budworm-killed softwood pulpwood, previously stored at roadside in the Cape Breton Highlands, to Stora Forest Industries for use in its mill. Approximately 22 percent of this wood had been debarked. As of March 31, 1986, there were 56,980 cords (206 529 m³ [stacked] (bark-on basis scale) still stored at roadside on the Highlands. Approximately 77 percent of this wood has been debarked.

PROGRAM PLANNING BRANCH

The Program Planning Branch is responsible for developing, evaluating and recommending policy and program alternatives in forest management and forest industry development. The branch is also responsible for the implementation of support programs, including forest nurseries, forest research, silviculture training, education and public information, wildlife parks, aerial insect-protection programs, and entomological services.

The branch comprises two subdivisions and four divisions:

- Forest Resources Education Subdivision, Truro
- Forest Industry Development Subdivision, Halifax
- Reforestation and Silviculture Division, Truro
- Forest Resources Planning and Mensuration Division, Truro
- Wildlife Division, Kentville
- Parks and Recreation Division, Debert

Direction in each case is provided by the Halifax Head Office.

Briefly, the Reforestation and Silviculture Division, P.O. Box 68, Truro, N.S. B2N 5B8 (895-1591), is responsible for planning and directing department programs to increase and improve forest yields within the province. This includes tree breeding, forest nurseries, silviculture training, forest research, entomology and aerial insect-protection programs. The Tree Breeding Centre (662-3300) is situated at Debert, and forest nurseries are in the following locations:

Provincial Forest Nursery
P.O. Box 130
Lawrencetown, Annapolis Co.
N.S. B0S 1M0
584-2234

Strathlorne Forest Nursery
P.O. Box 489
Inverness, N.S.
B0E 1N0
258-2626

Wittenburg Forest Nursery
P.O. Box 250
Stewiacke, Colchester Co., N.S.
B0N 2J0
639-2152

The Forest Resources Planning and Mensuration Division, P.O. Box 68, Truro, N.S. B2N 5B8 (895-1591), is charged with maintaining a continuing forestry inventory of all lands, land evaluation, scaling functions, and forest resources planning, which includes Crown land management planning, economic planning, and road engineering.

The Wildlife Division, P.O. Box 516, Kentville, N.S. B4N 3X3 (678-8921), is required to appraise and evaluate the status and population trends of wildlife and inland fish species and to recommend harvest pro-

grams. The division also operates wildlife parks at Shubenacadie (Colchester County), Upper Clements (Annapolis County), and Two Rivers (Cape Breton County), and a fish-rearing station at Kelly Lake (Halifax County).

The Parks and Recreation Division, RR#1, Belmont, N.S. B0M 1C0 (Debert) (662-3030), is responsible for conducting studies and creating plans for the orderly development of a provincial parks and trails system and construction program.

The Forest Resources Education Subdivision, P.O. Box 68, Truro, N.S. B2N 5B8 (895-1591), is responsible for a comprehensive education and technical information program for the general public and departmental staff.

The Forestry Industry Development Subdivision, 120 Exhibition Street, 3rd Floor, Kentville, N.S. B4N 4E5 (424-7708), identifies, investigates and analyzes development opportunities for wood-using industries within the province; advises on related support programs; and provides technical advisory service to the sawn-products sector.

ADMINISTRATION

FEDERAL/PROVINCIAL FORESTRY AGREEMENTS

As of March 31, 1986, two federal/provincial funding agreements were being implemented:

- 1) The Canada/Nova Scotia Forest Resource Development Agreement signed on August 31, 1982, to provide a total of \$53.4 million (\$28.3 million by Canada; \$25.1 million by Nova Scotia) to March 31, 1987, for forest renewal and related projects; and

- 2) The Canada/Nova Scotia Forest Renewal Agreement signed on June 27, 1984, to provide a total of \$25.5 million (\$17.0 million by Canada; \$8.5 million by Nova Scotia) for additional forest renewal projects with particular emphasis on the requirements of eastern Nova Scotia.

During the year under review, The Canada/Nova Scotia Forest Renewal Agreement was amended to provide for a silviculture worker training program and to effect changes in administrative procedures. The Canada/Nova Scotia Resource Development Agreement was amended to add \$8 million (\$5 million by Canada; \$3 million by Nova Scotia) for an expanded forest renewal program in Cape Breton in response to recommendations of the Cape Breton Advisory Committee.

FOREST RESOURCES EDUCATION SUBDIVISION

The subdivision provides a central education and information service to staff and public. This is carried out through an enquiries desk; literature; a motion picture program and audio-visual library; the production of exhibits, posters, and signs; special advertising; courses; and walks and talks. The service complements and supports the extension, public-information function performed to some degree by all staff. Full-time staff consists of one forester, one wildlife biologist, one technical writer, one field representative and two clerical support persons.

Public demand for information on all aspects of forest resources, especially forests and wildlife, is generally increasing.

Enquiries and Literature

Written and telephoned requests are answered by personal letter or by card, using literature from a list of about 90 titles on hand. We depend increasingly on our two periodicals—the quarterly wildlife magazine, *N.S. Conservation*, and the bimonthly forestry newsletter, *Forest Times*—to provide information once supplied by individual publications. Readers get the benefit of up-to-date information, and the department saves by buying and distributing reprints. During the year a combined total of 147,173 copies were mailed to individuals. As of March 31, 1986, the *N.S. Conservation* mailing list stood at 20,846, up from 19,392 on April 1, 1985; *Forest Times* started at 9,986 and ended at 12,796. We also serviced about 1,500 individual requests for literature, mailed six issues of *Technical Notes* and oversaw the publishing and distribution of the annual *Forest Products Directory*, the *Trappers Newsletter* (6,833 subscribers) and the department's annual report.

Other mailouts included National Wildlife Week kits (3,000, with locally designed material for the press), National Forest Week materials, two new posters, and special crests (8,075) to reward deer-management co-operators. The publications list was updated twice. Summaries of hunting, fishing and trapping regulations were prepared for publication. In all, 188,967 pieces of literature were distributed, including 4,475 ordered by the N.S. Government Bookstore.

The major production was *Forestry: A New Forest Policy for Nova Scotia*, a glossy, illustrated publication for which the manager co-ordinated design, illustration, printing and distribution (15,500 copies). He and the technical writer put considerable effort into the final editing of Ralph Johnson's *The Forests of Nova Scotia: A History*. Forestry information was supplied for the Department of Development's *Nova Scotia Resource Atlas* and a related request. A new edition of *The Trees of Nova Scotia* was produced, along with reprints of 10 leaflets and one

booklet. On behalf of the Canadian Committee of Forestry Communicators, the first issue of the quarterly newsletter *Forewords* was compiled and published. Many hours were spent editing the new *Fur Harvester's Manual*. A new manuscript on the snowshoe hare in Nova Scotia was prepared under contract. Artwork and/or copy were supplied for various items, including a "Report a Poacher" handout. With the help of the Department of Government Services, our computerized mailing lists were enhanced in capacity and accessibility.

Audio-Visual

Working through the Department of Government Services, the Forest Resources Education Subdivision produces, on the average, one 16mm motion picture each year. Since these films are of varying lengths and complexities, usually more than one is in progress.

The joint National Film Board/Department of Lands and Forests 16mm production, "The Last Log Drive," was completed, premiered and released via the NFB network and by the department's school film program and public loans library. Shooting for a 16mm film on modern forestry in Nova Scotia was two-thirds completed by fiscal year-end. Art boards for a slide set on pioneer uses of native trees were finished under contract. A videotape demonstrating proper pelt preparation was produced, as was a slide set for use at the House of Commons Standing Committee on Fisheries and Forestry.

Six films or videotapes were previewed and some were purchased. A casual employee was hired to relieve the biologist of maintaining films and equipment, and to update photo files. Slides were taken for a display and slide set on sawmilling. The technician operating as a film representative in Halifax-Hants reached some 12,000 persons, mostly school children, with messages on forest and wildlife conservation and forest-fire prevention.

Advertising and Media

A summer fire-prevention ad campaign was run during May provincewide, using print ads and 30-second radio spots. Because of budget constraints, television was not used for fire advertising, but a small hunting courtesy campaign was aired. Various print ads were placed to promote fire prevention, private land forestry, fish habitat management and, in particular, the Forest Worker Training Program.

Radio messages on forestry and wildlife topics were prepared or arranged for use by the Department of Agriculture and Marketing on its

public-service air time provincewide. Media opportunities were pursued by providing press releases, speeches and other assistance. The manager attended meetings in Saskatoon, Ottawa and Quebec as part of a team developing a National Forestry Awareness Campaign.

Exhibits/Signs/Posters

Thirteen venues were serviced. Two major exhibits were prepared: "Getting Involved," a contracted job to promote the private-land forestry program; and "Improving Fish Habitat," done through the Department of Government Services and featuring live trout and salmon. "Getting Involved" was used at the provincial Forestry Exhibition at Windsor and at several other venues. "Improving Fish Habitat" was shown at the Halifax International Boat Show in February 1986 and at the Atlantic Outdoor Sports and Recreational Vehicle Show, also in Halifax, in March. Attendance at the three larger shows was high, but the Boat Show was felt to be less appropriate for our purpose than the other two. At the Forestry Exhibition, a 14-minute, hourly presentation "Woodlot Rap" by Stage East Theatre Society drew crowds; we also provided a working sawmill model, a forestry equipment display, and helicopter fire-control demonstrations using the Bell 212 and Kelitak crew. Two new displays, "Sawmilling" and "Wardens at Work," were produced and used at several venues. A four-part poster series on game species was developed and the first two posters, "Upland Game Birds" and "Grouse," were completed. The series will be released in fall 1986. Signs were produced for the Forchu and Lunenburg group-venture organizations.

Curriculum and Teacher Training

Input was given to the Maritime Studies Project ("Maritext," for grades 9 and 10), to the "Share the Land" project of the Land Resources Coordinating Committee (Grade 4) and to the Department of Education's Science curriculum (Grade 7). The latter will become part of the N.S. Museum's forestry kit. The manager lectured twice at the N.S. Teachers College (NSTC) and assisted Dalhousie's Faculty of Education on two occasions. He also met with the Lunenburg County School Board on curriculum enrichment. The NSTC summer-school course, "Forest Ecology for Public School Teachers," had to be cancelled for lack of enrolment resulting from altered teacher-certification requirements. With Canadian Institute of Forestry representatives, the manager met with the deputy ministers of Education and Vocational Programs over the latter issue.

Other

Help was given to develop a National Forest Week media event to celebrate a decade of reforestation and forest management in rehabilitating the 33,000-acre (13 355 ha) 1976 Trafalgar Burn in Pictou County. Subdivision staff met with all Operations staff to improve our effectiveness in serving their needs. Considerable effort went into helping to revitalize the N.S. Forestry Association, with the result that a full-time secretary-manager is now in place to carry out the public education programs of this organization. The biologist attended biweekly Land Resources Co-ordinating Committee meetings and periodic N.S. Trappers Association executive meetings. Many talks and/or walks were conducted for school classes. Funding assistance was provided, under the Forest Resource Development Agreement, for the N.S. Woodlot Owners and Operators Association, the Annapolis Valley Affiliated Boards of Trade (AVABT), and several of the above programs.

FOREST INDUSTRY DEVELOPMENT SUBDIVISION

This past year was another relatively slow one in sawmill construction. New sawmill developments were as follows (to March 31, 1986):

- Murray Reeves, Lunenburg County—new stud mill
- S.M. Gammon, Pictou County—new stud mill
- Kingston Lumber and Building Supplies, Kings County—new planing mill
- Chris Bruhm, Lunenburg County—new planing mill
- Buddy MacDougall, Antigonish County—new sawmill
- William DesChamp, Shelburne County—started construction on new sawmill

The following renovations were undertaken:

- Scott Paper, Cumberland County—new J-sorter
- Jr. Worthen, Annapolis County—added edger and auto slab saw
- Taylor Lumber, Halifax County—added log length, log deck and slasher
- Harry Freeman, Queens County—added twin saw
- McClare Brothers, Hants County—added debarker

Under the federal-provincial Forest Resource Development Agreement's sawmill improvement program, Forintek Canada Corporation conducted productivity studies for Barrett Lumber Co. Ltd. at Beaverbank, Halifax County; Lewis Lumber Co. Ltd. at Weymouth, Digby County; and C.E. Harrison and Sons Ltd. at Parrsboro, Cumberland

County.

Dominion Chair Ltd. at Bass River, Cumberland County, installed a dehumidification dry kiln.

We had two serious misfortunes this past year: Riversdale Lumber Co. Ltd. near Truro and Long Lake Lumber Ltd. at Upper Ohio, Shelburne County, lost sawmills to fire.

The supervisor attended the following seminars: a chipper course held by Simons Cutting Tools and the Department of Lands and Forests; a chipping seminar at Lawrencetown, Annapolis County; a forestry exhibition in Ottawa; and a chip seminar in Truro. He attended numerous meetings on the following committees: Lumber Complex Committee, Ranger School Sawmill Committee, Ranger School Sawmill Computerized Committee, Nova Scotia Forest Products Association (NSFPA) Energy Committee, Britex Steering Committee, Mines and Energy Committee, and the Sawmill Committee. He attended a public-speaking course presented by the provincial civil service in Halifax, and attended meetings of the NSFPA, the Nova Scotia Forest Technicians Association (NSFTA) and the Maritime Saw Filer's Educational Association.

URBAN FORESTRY

To generate more interest in intensive management of the forest and related vegetation in urban areas, a forester was assigned to provide technical advice to representatives from the province's cities, towns and villages. He helped them set up a tree inventory and provided advice on the pruning, establishment, removal and planting of trees. As more communities learn about this service, more are making use of it.

Literature, slides and movies are used to assist in this promotional program. Plans call for a survey of the municipalities to determine tree-care needs, followed by seminars and booklets on tree care. The forester is also responsible for contacting the municipalities to determine the present level of management, sources of funding and the needs for implementing and co-ordinating the Dutch Elm Disease Assistance program.

Short-term job creation programs have been used by many municipalities to implement a more intensive tree-care program. At least 28 municipalities participated in a combination of the following programs: woodlot improvement, tree sanitation on street-side trees, boundary-line establishment projects, and tree inventories.

It is encouraging to see that several other municipalities are setting up tree committees and beginning tree-care projects. A start is being made on better tree-care programs.

DUTCH ELM DISEASE ASSISTANCE

Dutch Elm Disease (DED) was introduced to North America via Ohio in 1930 on elm logs imported from Europe. It was first noticed in Canada in 1944 at Sorel, Quebec, and was first detected at Liverpool in Nova Scotia in 1969. Since then it has spread and is now found in at least 11 counties.

DED is caused by a fungus which grows in the living cells of elm trees and blocks the movement of moisture, causing part or all of a tree's foliage to wilt and die. The disease is spread by native and introduced bark beetles, which feed on healthy tissues and breed on dead and dying tissues. In the spring and early summer the adults emerge from the breeding places carrying the spores. Once a tree is infected, the fungus spreads very rapidly, usually killing its host.

There is no known cure for this disease. But there are control measures which greatly lessen its effects. The City of Fredericton started a control program in the late 1950s which has restricted its losses to about 20 percent, compared to a loss rate as high as 90 percent in surrounding areas with no control.

Present methods are aimed at prevention and control. The first objective is to keep elms healthy, vigorous and properly pruned. A sanitation program that allows the speedy removal of all dead and dying elms is considered essential. Insecticides and fungicides have been used in some areas as part of a total control package but, because of their high cost and the need for special equipment and trained applicators, their use is restricted to high-value trees.

Assistance

The Nova Scotia Department of Lands and Forests has attempted to control the spread of DED by implementing a sanitation assistance program. At the beginning of the infestation, when the affected areas were small, contractors removed all infected elm limbs and trees, which were burned or buried. In the mid-seventies a three-year assistance program was initiated to provide financial help to the municipalities for sanitation work. Beginning in fiscal 1980-81 and each successive year since, the Province again provided such assistance.

The present program provides 50 percent cost-sharing to municipalities to carry out sanitation work on elm trees. The money is allocated in the following order of priority: (1) to municipalities with infected trees; (2) to municipalities with trees in the immediate area of infected trees; and (3) to municipalities in other areas.

Twenty-eight municipalities participated in the program this year—an increase of four over the 1984-85 fiscal year. As a result of increased

pressure on the government by the municipalities, the funding was increased to \$99,563.70 in 1985-86 from \$29,950.00 in the 1984-85 fiscal year.

The program was a great success, with 1,965 trees removed and 351 sanitized, a 400-percent increase over 1984-85.

The assistance allocated to each municipality is shown below:

Municipality	Number of Trees Removed or Sanitized	Provincial Grant
Antigonish	64	\$ 2,650.00
Truro	66	5,370.00
Bridgetown	42	5,115.00
Westville	15	1,000.00
Oxford	90	4,359.79
Stellarton	13	3,010.00
Berwick	14	900.00
Wolfville	22	2,750.00
Kentville	3	150.00
Pictou	35	4,395.00
Amherst	47	1,392.50
West Hants	211	8,000.00
Halifax	48	4,815.56
Digby	6	1,510.00
New Glasgow	83	7,990.00
Kings County	757	5,159.52
Pictou County	200	4,108.98
Stewiacke	4	213.75
Windsor	30	6,175.00
Middleton	264	5,850.52
Annapolis Royal	12	2,000.00
Shelburne	20	1,050.00
Halifax County	161	5,000.00
Colchester County	19	2,272.00
Lawrencetown	5	2,500.00
Annapolis County	15	6,100.00
Liverpool	67	4,250.00
Dartmouth	3	1,476.08
TOTAL	2,316	\$99,563.70

REFORESTATION AND SILVICULTURE DIVISION**NURSERY OPERATIONS****Administration**

Nursery administration staff, in co-operation with the three nurseries, are responsible for allocating available planting stock equitably. Other responsibilities include consolidating nursery budgets; co-ordinating cone crop surveys and collections; initiating or monitoring research projects at all three nurseries; monitoring nursery operations, budgets and major purchases; and providing advice and recommendations to staff members.

Distribution

Cutbacks initiated in 1983 were still being reflected in tree distribution in 1985 and will be again in 1986.

Distribution in 1985 by Nursery

Lawrencetown	4,015,034
Strathlorne	5,226,483
Wittenburg	1,810,708
Other	<u>366,905</u>
TOTAL	11,419,130

Distribution by User Agency

Crown—licensed	5,384,832
Crown—other	1,263,021
Large landowners	718,212
FRDA	3,534,807
Small private (non-FRDA)	504,125
Other	<u>14,133</u>
TOTAL	11,419,130

Of the trees planted by large landowners, 4,822,600 were highland spruce (white and black) grown specifically for reforestation projects on the Cape Breton Highlands. Of the trees planted on Crown lands and FRDA woodlots, 101,438 were planted by Boy Scout organizations.

Highland Spruce Production

The production of highland spruce for outplanting on the spruce budworm-ravaged Cape Breton Highlands is continuing.

Vegetative propagation of black spruce is gradually being replaced by white spruce grown from seed. This trend will probably continue.

Seed Procurement

In 1985, 341 bu (124 hl) of cones were collected, yielding 418 lb. (189.6 kg) of seed. Collections were down this year because of poor cone crops, especially in the seed zones where we would most like to collect. The main species and volumes collected were as follows:

Species	Volume
red pine	26 bu (9.5 hl)
red spruce	35 bu (12.7 hl)
white spruce	52.75 bu (19.2 hl)
highland white spruce	70.25 bu (25.5 hl)
black spruce	38.75 bu (14.1 hl)
tamarack larch	18.25 bu (6.7 hl)
balsam fir	100 bu (36.4 hl)

All of this year's collections were made by silviculture contractors and individuals.

In addition to seed obtained from our own collections, we purchased 88 lb. (40 kg) of red pine seed, 20.6 lb. (9.3 kg) of red spruce seed and 28 lb. (12.7 kg) of balsam fir seed.

Expansion and Development

Expansions and/or upgrading took place at all three nurseries in 1985. At Lawrencetown two new greenhouses were erected and another had a hot-water heating system installed, eight cold frames were erected, the shade house was expanded and a new area was developed for a transplant field.

At Strathlorne, a site for a new greenhouse complex was developed, 10 new greenhouses were erected and a small headerhouse was constructed. A new five-ton truck with a body for tree delivery was acquired.

Both of the foregoing projects were funded under the Canada/Nova Scotia Forest Renewal Agreement.

At Wittenburg, a new roof and siding were installed on the headerhouse and storage areas and two new offices were constructed. A

heating system was installed in one of the small greenhouses.

Training

Two staff members attended the Canadian Forest Tree Nursery Weed Control Workshop and five attended the Container Fertilization Technology Workshop. These workshops were held together in Fredericton, New Brunswick. Two staff members attended the North Eastern Area Nurserymen's Workshop in Ames, Iowa, and two attended the Maritime Nursery Manager's Workshop in Millinocket, Maine.

The superintendent of Strathlorne Forest Nursery was selected as the Department of Lands and Forests' representative on the Canadian Tree Nursery Weed Control Committee.

Public Relations

Nursery tours were conducted at all three nurseries for technical groups and individuals, special-interest groups, school children and youth groups, and the general public. A number of short talks were presented.

Plantation tours were carried out to establish a better rapport with field personnel.

Various reports were prepared and circulated to interested parties, and enquiries from the public were responded to in person, by telephone or through correspondence.

TREE BREEDING

The Tree Breeding Section is responsible for co-ordinating the overall Tree Improvement Working Group (TIWG) program and fulfilling the department's commitment to the project. Operational work is shared with three industrial members: Bowater Mersey Paper Company, Stora Forest Industries, and Scott Paper International. Technical and scientific expertise is made available through the Maritimes Forest Research Centre for the Canadian Forestry Service.

The program objective is to supply, by the year 2000, reforestation projects in the province with genetically improved and tested seed. Improvement in the first cycle of breeding is expected to increase the growth rate of planted stands by 10-20 percent (equivalent to 3-6 cords/acre or 25-50 m³/ha of *extra* yield at harvest). Additional benefits include increased resistance to disease, higher quality sawlogs and improved fibre quality for pulping.

Expansion of Orchards

Many of the orchards managed by the department and industry co-operators were expanded. Two new orchard installations were established by Stora: a black-spruce orchard at Aldershot and a white-spruce clonal orchard at Waterville. A summary of current orchard areas is given in Table 1 (Appendix).

The annual ritual of scion collection and grafting was repeated in January and February 1986, with some 10,000 grafts performed. Grafts from the two previous years were maintained in the transplant beds at the centre in preparation for orchard expansions in 1986 and 1987. Grafts already in the orchards were checked frequently during the growing season, with insect control, pruning and staking performed as required.

Test Plantings

The major expansion of black spruce-seedling seed orchards was accompanied by field tests to evaluate new family selections introduced since 1982. Given the large number of families to be tested, the material was divided into two separate experiments, using a common set of 23 standard families which had been included in the 1982 test series. Each experiment was established at four sites in mainland Nova Scotia.

- Round Lake, Annapolis County (Bowater Mersey)
- East Leicester, Cumberland County (Lands and Forests)
- Urbania, Hants County (Scott Paper)
- Barren Brook Road, Pictou County (Lands and Forests)

An assessment of five-year periodic height growth, survival and condition was made for a rangewide white-spruce provenance test planted at three locations in 1981. Only one of the Maritime sources was remarkably poor: Glencoe, Inverness County. Sources from the eastern Northumberland shore of Prince Edward Island and the Cape George area of Antigonish County were particularly good. Performance of the Ottawa Valley sources in other experiments has generated considerable interest across eastern Canada. Although Ottawa Valley sources did reasonably well in our 1981 tests, only a handful were comparable with P.E.I. and Nova Scotia sources. All other sources from Ontario and Quebec were quite poor.

Several new tests were initiated at the Tree Breeding Centre for field planting in 1986. These included a larch trial using several sources of native tamarack (*Larix laricina* [DuRoi] K. Koch), European larch (*Larix decidua* Mill.), Japanese larch (*Larix leptolepis* [Sieb. and Zucc.] Gord.) and the Dunkeld Japanese x European hybrid (*Larix eurolepis* Henry). Open-pollinated seed collected from red, white and Norway spruce at the Lawrencetown seed orchard in 1984 was established with comparison

seedlots to evaluate the genotypic value of the individual clones, and the genetic gain achieved by the orchard.

Stand Out-crossing Project

Seed from the Highlands of Cape Breton has been in very short supply, as budworm feeding and the harsh environment have all but eliminated flower production. Reforestation stock for this area is required in large numbers (six million trees annually) and is currently produced as rooted cuttings.

Provenance test results have suggested that the level of inbreeding may be high in the long, narrow stands of black spruce found in the Highlands. Since nursery production is already geared for rooted-cutting propagation, it was felt that controlled mating would produce sufficient seed and reduce inbreeding by mating parents from widely spaced stands. A pilot project was initiated in 1985 using pollen from three stands to produce out-crossed seed by controlled pollination.

Small seed samples from each cross were used to establish genetic test material at the Tree Breeding Centre. The remaining 15,000 seeds were sent to Strathlorne, where they will be used as genetically improved donor stock for production of rooted cuttings. The project will be greatly expanded in 1986.

Expansion of Computerized Methods

Significant progress was made in expanding the use of computer methods to several areas of this section's responsibility. Conversion of all seed-orchard records to computer files was completed, and a start made on a seed inventory/transaction system and the conversion of the many test plantations to a computer record system.

The Tree Breeding Section participated in a three-month microcomputer demonstration in co-operation with the Department of Government Services. Results of the project demonstrated that microcomputers could result in greatly reduced data-processing costs compared to current mainframe/remote-terminal methods. A report was prepared and a request was made to the Electronic Data Processing (EDP) Advisory Committee.

The Tree Breeding Section also supervised a special project under the Forest Renewal Agreement to evaluate the use of portable data recorders for the collection of field data. Results of the project were very encouraging and showed that these units can be readily incorporated into a variety of field-collection operations, resulting in higher accuracy and greatly reduced transcription cost and data-preparation time. A report was

prepared that recommended specific makes and models for purchase consideration.

Seed Inventory and Testing

The Tree Breeding Section is also charged with inventory and quality monitoring of tree seed in storage for department use. Over 1,500 production and research seedlots are maintained at the centre, and withdrawals and deposits occur frequently throughout the year. The centre received several requests for research samples and made seed available to researchers at the Nova Scotia Research Foundation, the University of New Brunswick, Cornell University, the Canadian Forestry Service, and the U.S. Department of Agriculture Forest Service.

All new seedlots are tested for both physical quality and viability. Seedlots in long-term storage are tested on a regular basis to monitor effects of storage on seed quality. Unfortunately, germination tests were disrupted in the latter half of the year as a result of equipment problems, which eventually led to a major rebuild of our laboratory germinator. Thus a series of tests in co-operation with the National Tree Seed Centre at the Petawawa National Forestry Institute was abandoned. However, this test series, designed to evaluate the effects of stratification, germination media and water relations on germination results, will be restarted in 1986.

Communications

Staff at the Tree Breeding Centre gave many tours to professional, educational and general-interest groups during the year. The centre has become a regular field trip for courses arranged by the department, the Nova Scotia Agricultural College (NSAC), Commercial Safety College, Maritime Forest Ranger School, and University of New Brunswick. Presentations were made to a variety of service clubs, and community and professional groups, and interviews were given to radio and newspaper reporters.

Conferences and courses were attended by Tree Breeding Section staff, including the 20th biennial meeting of the Canadian Tree Improvement Association (CTIA) held in Quebec City. Each agency involved in the TIWG program has representatives who are active members of the CTIA, and most attended this meeting. The department's offer to host the 21st CTIA meeting in 1987 was confirmed, and two staff members were elected to the CTIA executive: T.J. Mullin, Chairman, CTIA/ACAA; and H.M. Frame, Chairman, Local Arrangements, 21st Meeting.

Staff reviewed journal articles and technical reports prepared by other department sections and outside agencies. Several articles prepared by Tree Breeding Section staff were accepted and published by trade and scientific journals.

ENTOMOLOGICAL SERVICES

Pest Detection Officers

There are 24 Pest Detection Officers in the department. The PDOs assist in the general Forest Insect and Disease Survey, spruce budworm survey and gypsy moth survey. In 1985 they submitted 480 insect and disease samples.

Forest Pests

Spruce Budworm:

Defoliation of balsam fir and spruce in pure and mixedwood stands occurred on 853,140 acres (345 254 ha) in 1985, of which 65, 220 acres (26 394 ha) were light, 79,355 acres (32 114 ha) were moderate, 692,148 acres (280 103 ha) were severe with moderate patches, and 16,417 acres (6 644 ha) were severe. Overall, the area of defoliation increased by 406 percent from 1984 (see Table 2, Appendix).

Gypsy moth

The Gypsy Moth Co-ordinating Committee remained active, co-ordinating all surveys. In 1985 gypsy moth was found for the first time at Annapolis Royal, Windsor and Port Williams. Both the Town of Bridgewater and Kejimikujik National Park are suspect for gypsy moth. The Town of Shelburne carried out egg-mass destruction efforts.

Spruce budmoth

Populations of spruce budmoth were noted in the Cape George area of Antigonish County. Spruce budmoth numbers on white spruce were similar to those of spruce budworm.

Spruce coneworm

From Pugwash to Tatamagouche and inland for about six miles (10 km) along the Maritime Plain, populations of this species were found in numbers equal to those of spruce budworm.

Spruce beetle

This species continues to cause spruce mortality in Nova Scotia.

Hemlock looper

Hemlock looper has caused defoliation on an area of 1,112 acres (450 ha) at Diligent River, Cumberland County, and in Ile Bonne Portage, Shelburne County.

Whitemarked tussock moth

Egg-massed of the whitemarked tussock moth are being seen in Antigonish, Guysborough, Halifax and Queens counties.

Fall cankerworm and winter moth

Fall cankerworm, sometimes mixed with winter moth, caused moderate and severe defoliation of maple and oaks over an area of 39,537 acres (16 000 ha) in patches of central and western Nova Scotia.

Debarking Weevil

This species continues to cause seedling mortality in Pictou and Antigonish counties.

Pathogens*Dutch Elm Disease*

In Nova Scotia the disease spread and intensified, especially in the Mabou, Hillsborough and Whycocomagh areas. Throughout the rest of the province, most new locations were from inside or on the peripheries of the known distribution.

Prediction Surveys

The department undertakes an annual census of overwintering spruce budworm larvae, known as the L-2 survey. The objective of this survey is to predict populations and damage for the coming year. Field samples from 362 locations were collected (331 by Lands and Forests personnel and 31 by Bowater Mersey Paper Company personnel).

In general, the spruce budworm infestation remains intensified and concentrated in central Cumberland County and along the Northumberland coast.

On the Cape Breton Highlands, there has been an increase in the frequency of low populations since 1984. This year, moderate populations were noted at Little River, Victoria County, and, as in 1984, at Southwest Margaree, Inverness County. Low populations were noted in the McEvoy's Barren area, around Mabou and in the Creignish Hills area.

In the southern mainland, there has been a shift in populations. Areas of moderate populations in 1984 have collapsed, in particular those at the Head of St. Margarets Bay. However, an area of moderate

populations exists near Digby. Low populations have been noted in Kings, Annapolis, Digby, Yarmouth, Shelburne, Queens, Lunenburg and Halifax counties.

In the northern mainland, the infestation continues to persist in Cumberland County along the Northumberland coast, and in the Cape George area of Antigonish County. The populations of spruce budworm continue to pose a serious threat to softwood forests in these areas, and noticeable defoliation can be expected to occur.

Spruce Budworm Spray Program

The objective was to protect current foliage in treatment areas. This year's expanded program — three times larger than 1984's — reflects both an intensified infestation and the desire of private individuals to have their land protected.

Area flown:

A total of about 125,000 acres (50 000 ha), mostly in Cumberland County, were sprayed. More than half the area sprayed comprised small farm woodlots; about 29 percent were large private ownerships; and about 17 percent was Crown land. The cost was \$2.87 per acre (\$7.10 per hectare) for fixed wing, and \$5.90 per acre (\$14.59 per hectare) for helicopter.

Four group ventures played an integral role in dealing with private landowners' applications for foliage protection. In Antigonish a woodlot protection organization also assisted the department with applications. In Nova Scotia, private individuals must apply for foliage protection.

There were 201 treatment areas in the program, ranging in size from 0.6 acres (0.25 ha) to 16,064 (6 501 ha). Seven cone-production areas in Cape Breton were sprayed.

Aircraft:

The aircraft used were one Cessna Pawnee; nine Ag-Cats; and one Bell 206 B helicopter. The fixed-wing spray aircraft were accompanied by a fixed-wing guidance aircraft; a Hughes 500 accompanied the Bell 206 B. All spray aircraft were fitted with Micronair AU 5000 mini-atomisers. Five airports were used in the program: Moncton; Parrsboro; Debert; Trenton; and Crowdis Mountain.

Biocide:

The biocide used this year was Dipel 132, a commercial formulation of

Bacillus thuringiensis kurstaki (Btk). Formulations were applied neat.

Efficacy:

The early emergence of spruce budworm larvae, the late development of red spruce species-complex buds, and inclement weather impeded the overall success of this year's program. The values for reduction of larval survival and for foliage protection were lower than anticipated. The mean value for the reduction of survival on white spruce was 50.9 percent, for red spruce in central Cumberland County it was 77.8 percent, and for red spruce along the Northumberland coast it was 34.8 percent. The mean value for the degree of foliage protection of white spruce in central Cumberland was 16.1 percent (absolute) or 26.6 percent (proportional), and along the Northumberland coast was 15.9 percent (absolute) or 25.9 percent (proportional).

This year, control plots were used as a basis of comparison for a cluster of nearby treatment areas. This is normal practice in operational spray programs.

SILVICULTURE TRAINING

Silviculture Course

A new silviculture course on "Cleaning" was presented in nine locations throughout Nova Scotia. The one-day sessions were attended by approximately 320 persons, including foresters, technicians, forestry consultants, silviculture contractors and their foremen, and forestry students from vocational schools in Middleton, Bridgewater and Sydney. This was the fourth in a series of in-service training programs designed to keep Lands and Forests and private-sector staff up to date with recent developments in silviculture research. Courses are based on information contained in the department's *Forestry Field Handbook*.

The course was also presented in Fredericton at the invitation of the N.B. Forest Extension Service. Thirty-two foresters and technicians working on private lands attended the session.

Workshops

Seven "Plantation Workshops" were conducted during the summer and early fall to help reinforce information presented on earlier classroom planting courses. The two- and three-day workshops included visits to older MacKay plantations and recent plantations in Trafalgar and Cape Breton, and tours of the Tree Breeding Centre in Debert and the

Strathlorne Forestry Nursery. Eighty-eight persons participated, including staff of Lands and Forests, companies, Group Ventures, forestry consultants and silviculture contractors from throughout the province.

Woodlot Management Course

Nine students of the Nova Scotia Agricultural College attended the "Farm Woodlot Management" course during the fall semester. 1985 was the fifth year that degree and technical students could enroll in this course, designed to acquaint them with the farm woodlot resource and how to best manage it.

Manuals and Training Aids

Copies of the "Cleaning" course binder—including lesson plan, visuals and reference materials—were distributed to selected course participants, better enabling them to carry on the training.

Updating and cataloguing of color slides and photographs in the various silvicultural activities continued. Good training aids have proven to motivate learning and these are constantly being borrowed from the section for courses, lectures and meetings.

Other Activities

Subdivision personnel continued to represent the department on advisory committees supporting forest-worker training programs in Nova Scotia. Of particular concern was the establishment of standardized skills programs using highly skilled instructors to enhance the safety and image of forest workers in the province. 1985 saw the inception of the Professional Silviculture Worker programs (Levels I and II) through the Commercial Safety College in Masstown.

FOREST RESEARCH

Herbicide Trials

Research shows that reducing vegetative competition in plantations significantly increases the growth and survival of the crop seedlings. Data from ongoing research trials has been used to determine (1) minimum effective rates, (2) cost-effective methods, (3) effective application techniques and (4) effective and safe times of application. Six trials were established emphasizing new ground-application equipment, and the susceptibility of target and non-target species to applications at

various rates and times of the year. Research was also done with newly registered herbicides to assess their effectiveness in controlling competing vegetation.

In addition to the new trials, 322 permanent sample plots in previously established trials were remeasured. These plots are remeasured annually so herbicide prescriptions can be refined and updated.

Growth and Yield

The softwood growth and yield model developed by the Research Section has been operational for several years. However, to refine the model and expand the data base, permanent sample plots (PSPs) are continually being established in unmanaged and managed natural softwood stands and plantations. Previously established PSPs are remeasured every five years. In 1985, 20 new softwood PSPs were established and 81 plots were remeasured.

Permanent sample plots continue to be established in managed and unmanaged hardwood stands with the intent of developing a growth and yield model for hardwoods. This will lead to the development of management prescriptions for hardwoods similar to those developed for softwoods in the *Forestry Field Handbook*.

Reforestation Trials

In co-operation with private industry, experimental plantations were established on different sites, using several species planted at various spacings. Permanent sample plots will be established so the growth and yield of these plantations can be monitored from establishment to harvest. These areas will also be used to demonstrate to the public and forestry personnel the effects of spacing on plantation performance.

Hardwood plantation trials were established to test the Sommerford Sheltratree system. This system places a plastic tube around the tree protecting it from rabbit and deer browsing and improving the tree's environmental conditions.

To monitor the performance of planting stock from provincial nurseries, approximately 500 acres (200 ha) of plantations established on private lands were assessed by research staff.

Experimental plantations totalling about 160 acres (65 ha) were reassessed to collect data on the performance of stock planted on various sites. These data are used to develop management prescriptions for plantations, including site preparation methods, types and rates of fertilizer, and species and stock-type suitabilities to site.

Christmas Tree Research

Five new Christmas-tree research areas were established in natural balsam-fir stands growing on a range of sites. These areas will be treated with various rates and types of fertilizer, and the results will be assessed to determine the most effective fertilizer treatments for different sites.

Work continues to assess the effects of various cultural practices, including shearing, growth regulators, herbicide applications and fertilization, in natural stands and plantations.

Regeneration Research and Surveys

Regeneration surveys were carried out in managed hardwood and softwood stands and in clearcut areas to collect data on stocking levels and the site and stand conditions that influence natural regeneration.

Approximately 2,000 plots were established or remeasured, sampling more than 25,000 acres (10 000 ha) in various parts of the province.

Equipment Trials

Equipment for harvesting or silvicultural applications is constantly being developed or modified. To assess some of this equipment a number of trials were established in 1985: (1) a small tractor-mounted chipper was tested for utilization of unmerchantable wood from silvicultural and clearcut harvesting operations; (2) a Symond's rotary rake was tested to determine its brush-raking capability on a variety of sites; and (3) a Symond's blade plow was tested on several sites to determine if it could satisfactorily control brush and improve drainage.

Tours and Presentations

The Research Section is often called upon to arrange and conduct field tours or make presentations on research trials, forestry operations and forest conditions within the province. Several tours were conducted by this section during the year for government and industry personnel.

Annual Allowable Cut Model

Forest Research staff has developed a computerized simulation model—Strategic Analysis Wood Supply (SAWS)—to rapidly determine the effects of various management alternatives, disasters, etc. on the immediate and long-term supply of wood. The model is now operational, and modifications and refinements will be made as the data base expands.

FOREST RESOURCES PLANNING AND MENSURATION DIVISION

FOREST INVENTORY

General

Forests are a living resource, in constant flux. Sound forest management, therefore, requires constantly updated data. One of the best ways to collect and maintain such information is through a recurring inventory. Such an inventory of the province commenced in 1964 with aerial photography of Pictou, Antigonish and Guysborough counties, followed by photo interpretation, cruising, compilation and reports. By 1971 photography was complete for all counties and the second cycle began in these same counties. Meanwhile, the subsequent phases took their course, all reporting on a 10-year basis so that no data are more than a decade old. The stages are reviewed below in the order of completion.

To provide current data on forest growth and yield, a provincewide system of 1,765 permanent plots of 0.1 acre (0.040 4 ha) is also employed. These are measured every five years. The first remeasurement of 1965 plots commenced in 1970, the second in 1975.

Aerial Photography

This is contracted to Atlantic Canada Airborne Sensing Inc. a year before the field work begins. During the spring and summer of 1985, aerial photographs were taken of Cumberland and Colchester counties using true colour film. From these were produced prints for photo interpretation, scale 1:10 000.

Field Work

From April to September a crew of 16 men established 2,000 sample plots in over 400 stands in Inverness and Victoria counties. Data on wildlife habitats also are being gathered in conjunction with the field work. From September to December a crew of 14 men remeasured 400 permanent sample plots across the province. This represents the fourth measurement on these plots for determination of growth and mortality.

Compilation and Report

The data from the new inventory are being compiled and the results of the Cape Breton South subdivision have been compiled and a report is

being drafted. The field data for Inverness and Victoria counties are being compiled and will be reported upon completion.

A new forestry data base was designed for use with a Geographic Information System. The data base will be obtained by photo interpretation of aerial photographs of all lands in the province of Nova Scotia. The data base will detail individual stand conditions and indentify non-forest categories. This will allow better analysis of the forest resources and better planning for the future.

Forest Production

Total commercial forest production for the 1985 calendar year decreased by four percent from 1984. Softwood lumber decreased by five percent; hardwood lumber increased by 18 percent. Overall reported lumber production decreased by four percent.

The number of firms reported as sawing lumber and/or boxwood was 360, up 7 from last year.

Pulpwood exported from Nova Scotia in 1985 decreased by 72 percent from the 1984 value of 28,282 cords (138 756 m³ (stacked)) to 10,520 cords (38 131 m³ (stacked)) in 1985.

Of the 111,027,580 ft.³ (314 395 m³) of primary wood production, 30.4 percent was acquired by sawmills and 69.6 percent went to roundwood users. Of the 33,699,017 ft.³ (954 249 m³) of primary production processed by sawmills, 111,124,201 ft.³ (3154 002 m³) went to pulpmills as chips from sawmill residue.

Compared to 1984, increases in production were noted for hardwood lumber, mine packs, and laths. Decreased were reported for softwood lumber, pulpwood, pulp chips, railway ties, pit props, shingles, staves and headings, and boxwood. (See Tables 5-8, Appendix.)

LAND EVALUATION

There were 17 separate lots of land evaluated for possible trade or purchase by the Crown—a total area of 4,042 acres (1 636 ha).

SCALING

In keeping with department policy, check scales were carried out on primary forest products cut under lease or agreement from Crown lands. The scaling project at Scott Maritimes, which monitors the conversion factor from mass to volume, has been altered to include a check of individual company scalers. Two firms with cutting agreements with the Crown are beginning to deliver tree-length material to their mills to bet-

ter control quality through proper slashing. A 3P sampling system is being designed to do check scales on tree-length material.

Assistance was given to various subdivisions and private firms in resolving scaling problems and complaints.

Work has continued on the proposed scaling manual. The latest edition has been sent to the major forestry groups and industries for their comments and concerns.

The Supervisor of Scaling attended a meeting of the Scaling Committee of the Canadian Standards Association. This meeting was to update members on the status of conversion to metric measurement of forest products across Canada. Various scaling techniques and problems were discussed.

The annual Timber Scaling School was held on October 7-11 at the Agricultural College in Bible Hill and offered candidates the opportunity to obtain a sawlog scaling license, a pulpwood scaling license, or a Primary Wood Products scaling license—a combination of the sawlog and pulpwood licenses. The school was attended by 22 candidates.

A second school was held in Port Hawkesbury on October 20-22 and offered the candidates the opportunity to receive a pulpwood scaling license only. The school was attended by 19 candidates.

The combined pass rate for both schools was 83 percent.

FOREST MANAGEMENT PLANNING

The Forest Management Planning Section continues to work towards the acquisition of a geographic information system (GIS). Maritime Resource Management Services is testing the Geo-Base system to see if it could meet the department's needs. Using data from the Tobetic Management Area, MRMS has produced new cover type, biophysical and wildlife maps. These maps can be overlaid with wildlife and recreation information, thus providing a better data base for forest management.

Remote sensing techniques have been developed to the point that satellite images can now be used in an operational mode for monitoring land-use activity.

Additional experiments using new sensors for detecting budworm defoliation are in the planning stages.

An experimental trial using radar sensors for inventory activity has also been planned for 1986.

This section has continued to approve annual operating plans for forest management activities on unencumbered Crown land. Management of unencumbered Crown land, however, has been reduced in the last year because of the provincial government's policy of encouraging private land management ahead of Crown land management.

Access Road Engineering

The Forest Engineering group is responsible for the preliminary planning, preconstruction and construction surveying and the engineering, monitoring and quality control of all forest access-road construction on Crown lands. Also included in this work are the hydrology studies and design of all stream crossings encountered during the construction of these roads. A total of 53.5 miles (86.1 km) of forest access road was constructed during the year. Construction consisted of 5.0 miles (8.0 km) of Class B, 32.1 miles (51.7 km) of Class C, and 16.4 miles (26.4 km) of Class D roads. Hydrology studies were completed on 23 stream crossing sites, resulting in the design of nine bridges and 14 box or round culvert crossings.

As in past years, roadside seeding was done to reduce the environmental impact on streams and lakes in the immediate area of new road construction. Approximately 120 acres (49 ha) of roadside grass seeding was completed on 40.1 miles (64.6 km) of road right-of-way after road construction was completed. Some of these roads included newly constructed provincial-park access roads.

The Forest Engineering group, in its continued involvement in parks development, prepared three contracts for provincial park development during the year. The work completed consisted of park access-road construction, vehicle parking lots, and campsite development, resulting in a total expenditure of \$80,000.

TIMBER LOAN BOARD

The work of the Timber Loan Board's chief technician entails the location, field examination and investigation of physical plants and businesses, and the preparation and presentation of reports to the board. Five applications were received from three different firms for three separate parcels of land covering approximately 435 acres (176 ha). The board accepted two applications and processed two loans. The Timber Loan Board's chief technician co-ordinated the processing of application for loans, annual inspections, investigations and reports required.

WILDLIFE DIVISION

NON-GAME

The Non-Game Section was established to serve the growing public interest in non-consumptive uses of wildlife and in habitat protection and conservation. The section provides the department's means to review,

evaluate, analyze, plan, and complete studies and reports on the status and habitats of wildlife species not traditionally considered game species. This capability permits the appropriate management of non-game species and their habitats.

Major non-game projects and activities in the past year have concentrated largely on those species protected by Provincial statutes. These species include hawks, eagles, owls and cormorants. Food habits and habitats are studied in relation to human resource development and use. Among the many non-game projects completed or continued in 1985-86 were studies of the numbers, productivity, wintering areas and food habits of breeding bald eagles. Based on a relatively stable and productive population of approximately 125-150 breeding pairs, the Province agreed to donate eight nestling eagles to the United States. This action was taken as part of a long-term co-operative program to assist that country in re-establishing breeding bald eagle populations in its northeastern states.

More than 600 bald eagles have been banded to determine survival and movements of marked birds. Eagle wintering studies now underway indicate that agricultural as well as wild carrion is important as an additional food source for young birds.

Also studied in 1985-86 was the use of orchard habitat by wildlife. Food habitat studies of great and double-crested cormorants in relation to commercial and sports fish have been extended to collect additional information. Island seabird inventories and island ecological surveys were continued, as was the co-operative program with the Forest Inventory Section to measure wildlife habitat characteristics within a variety of forest types.

The use of osprey of substitute nest platforms placed next to power-line poles was again monitored. Additional substitute sites elsewhere were successful in maintaining local breeding populations of these birds.

Additional responsibilities assigned to the Non-Game Section in 1985-86 included provincial representation on the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and provincial administration of regulations regarding the Convention on International Trade in Endangered Species (CITES). Implementation of the Provincial Policies for the Conservation of Wildlife Habitats involves representation on the Wildlife Habitats Advisory committee by the Non-Game Section.

Many requests for assistance in dealing with nuisance non-game animals were answered, and several minor pest-animal complaints were investigated. General information on non-game animals was made available as requested by the public, and presentations on non-game species and their habitats and on wildlife-habitat planning were made to

various public groups and committees.

BIG GAME

Deer

There were 97,739 licensed deer hunters in Nova Scotia during the 1985 season. Of these, 16,999 purchased second deer permits, allowing them to hunt for two deer during the season. Among the license holders were 85,539 holding regular resident big-game licenses; 10,563 holders of resident senior-citizen licenses; and 1,583 non-resident big-game license holders (see Table 9, Appendix).

Reported hunter success was 61.9 percent for regular resident licenses, 35.2 percent for resident senior citizens, and 58.9 percent for non-residents. Second deer-permit holders reported 51.5 percent and 50.8 percent for residents and non-residents respectively.

Based on these returns, a total deer harvest of 66,390 was determined. This is the highest calculated deer kill in Nova Scotia's history. Biologists warn of the potential for a crash in the population similar to that of the mid- to late-1950s and 1960.

The deer kill consisted of 54.6 percent males this season. The breakdown by county was:

Kings	2,184	Lunenburg	5,197	Halifax	4,979
Annapolis	3,151	Cumberland	6,240	Hants	5,736
Digby	2,249	Colchester	6,699	Cape Breton	2,877
Yarmouth	2,233	Pictou	5,097	Richmond	2,068
Shelburne	2,051	Antigonish	1,615	Inverness	4,037
Queens	3,012	Guysborough	4,858	Victoria	1,977
				Unknown	130

Bear

Big-game hunters' reports indicated a bear kill of 337, while foot-snare permit holders took an estimated 239 bears. An additional 15 bears were killed to control depredation, and four were killed by cars.

Nuisance bear complaints dropped from 71 in 1984 to only 30 in 1985.

The total calculated bear kill for Nova Scotia was 595 bears distributed across the province as shown:

Kings	31	Lunenburg	92	Halifax	6
Annapolis	31	Cumberland	5	Hants	21
Digby	98	Colchester	32	Cape Breton	0
Yarmouth	87	Pictou	24	Richmond	0
Shelburne	68	Antigonish	12	Inverness	4
Queens	76	Guysborough	5	Victoria	3

Moose

Moose populations on the mainland seem unable to gain in numbers. The best explanation seems to be that the continuing mild winters that are allowing deer densities to increase are also permitting the deer to occupy the Cobequid and Pictou-Antigonish uplands year-round, whereas previously these areas had been left to the moose during winter concentration periods.

On Cape Breton, deer continue to leave the highlands in winter, and the introduced moose seem to be doing very well. A limited harvest for the Cape Breton Highlands in 1986 seems warranted to help manage that herd.

FURBEARERS

The sale of resident furbearer licenses for the 1985-86 season totalled 4,349, an increase of 250 (six percent) from the 1984-85 season. Pelt prices fluctuated somewhat, when compared with the previous year. Raccoons were the highest in total economic value, with an increase in total harvest as well as higher pelt prices (see Table 10, Appendix). An increase in the bearer harvest, brought about by elevated population levels, a higher bag limit per trapper, and increased pelt prices, placed this important furbearer second in order of economic importance. Although the bobcat harvest was up slightly from the previous two years, a deflated average pelt price (down by as much as 20 percent) lowered its economic importance, when compared to last year. The coyote harvest continued to climb, peaking at 396 animals this past year, with the average pelt price close to last year's.

Fox, muskrat and otter were all down in average pelt values and aggregate economic value when compared with the previous year. Values for all other furbearers fluctuated slightly when compared with last year's totals (see Table 11, Appendix).

The \$50 bounty that has been in effect on coyotes will officially be terminated as of June 30, 1986. Its place is a compensation program to financially assist farmers who have lost sheep as a result of coyote depredation, and to subsidize the cost of electric fencing to prevent sheep losses to these predators.

As of August 1, 1986, all first-time fur harvesters will have to attend and successfully complete a mandatory fur harvester's course to purchase a furbearer license for the 1986-87 season. The courses, sponsored jointly by the Department of Lands and Forests and the Trappers Association of Nova Scotia, should begin in August.

UPLAND GAME AND WATERFOWL

The resident small-game license sale dropped from 31,379 in 1984-85 to 30,186 in 1985-86, a decrease of 1,193 (4 percent). An additional 10,563 resident senior-citizen licenses were issued, enabling recipients to hunt for big and small game.

The number of people hunting small game was generally lower than the previous year (see Table 12, Appendix). Only ruffed grouse and pheasants showed an increase in hunter numbers. All categories of waterfowl hunters were considerably lower than last year (black duck down 46 percent, sea ducks down 33 percent, other ducks down 52 percent and geese down 38 percent). This may have resulted from the institution of the Wildlife Habitat Canada stamp, which required waterfowlers to pay an additional \$4.00 in order to hunt.

The harvest levels of rabbits, ruffed grouse, huns (Hungarian partridge), woodcock and sea ducks were all above last year's totals, while the remaining species were all lower. There was a 40 percent increase in the number of woodcock taken, and a 26 percent increase in ruffed grouse taken. Along with the lower number of waterfowl hunters afield this year were reduced levels in three of the four categories. Black ducks were down by 39 percent, other ducks down by 45 percent and geese were down by 54 percent. Only sea ducks showed an increased harvest level of 30 percent (see Tables 13 and 14, Appendix).

No censusing of the introduced populations of ptarmigan and Arctic hare on Scatarie Island were conducted in 1985.

INLAND FISHERIES

Stocking

A total of 29,170 yearling brook trout and 42,203 yearling rainbow trout were reared and distributed from the Kelly Lake Fish Culture Station in 1985 (see Table 15, Appendix). These "put and take" fish are part of the overall provincial stocking program. The brook trout were stocked as nine-inch (22 cm) yearlings in lakes readily accessible to the public. The rainbows varied from six to ten inches (15-25 cm) and were used in areas where they were expected to grow (notably the Bras d'Or Lake).

Assistance was given to Fisheries and Oceans Canada in the helicopter transport of salmon smolts to remote areas of the Middle and North rivers of Victoria County, and of salmon fry to the Gaspereau River, Kings County.

Lake and Stream Surveys

Fifty-one lake surveys were completed in 1985 as part of our continuing inventory program. This brings the number of completed lake surveys to 816 (although a number of these have more than one year's data). Additionally, we assisted the Cobequid Salmon Association in surveying 54.6 miles (87.4 km) of rivers in the Minas Basin area of Colchester County.

pH Conditions

As part of the 1985 lake-survey program, extensive chemical tests were conducted on surveyed lakes to determine their pH levels and future susceptibility to acid rain. This was done in co-operation with the Nova Scotia Department of Environment.

Trout Populations

A monitoring of baseline populations of wild trout as related to habitat type was conducted by electroseining on surveyed streams at 89 sites.

Creel Census

Fishermen interviews were conducted on Kelly Lake and Hubley Lake and in the Wreck Cove area. In addition, the personal fishing-record program was continued in 1985 and staff collected biological data from 1,467 anglers in conjunction with their enforcement duties. The regular fishing license and salmon license stub return data were collected and analyzed.

Mail Surveys

Questionnaires were sent to 1,400 Nova Scotia anglers as part of a Canada-wide recreational fishing survey conducted every five years. The survey is designed to collect social, biological and economic data on recreational fisheries both provincially and nationally.

Habitat

Our experimental habitat improvement work continued in 1985 with the monitoring of two projects already completed and the initiation of a new project on Breac Brook, Cape Breton County. The latter is a joint Lands and Forests, Fisheries and Oceans, and University College of Cape Breton initiative which collected detailed preconstruction physical and biological data in 1985.

Sediment problems on the Stewiacke River were investigated in 1985 at the request of the Cobequid Salmon Association.

Calculated Catch

The calculated catch of brook trout by licensed anglers in 1985 was 1,126,227, or 14.4 fish per license.

WILDLIFE AREAS**Provincial Wildlife Parks**

The Provincial Wildlife Park at Shubenacadie enjoyed another successful year with a new bear pen and a cougar enclosure being added to our exhibits. As in former years, we opened on May 15 and closed September 2, and much interest was shown in the displays. Estimated attendance for the year was 325,000, approximately the same as the previous year.

During the year, 287 wood ducks were hatched, reared and released. The number was down from the previous year because of unfavourable spring weather conditions. This project has been successful over the years and appears to have wide public support.

During the spring and early summer, 691 ringneck pheasants were hatched and released through private individuals and wildlife associations in the province. Over 200 gadwall eggs were obtained from Quebec and, from these, 171 ducks were released through Ducks Unlimited.

Both Upper Clements and Two Rivers wildlife parks attracted over 100,000 people during the season and are being continually upgraded.

Wildlife Management Area

The following areas were managed by the department:

	Predominant species	County
Abercrombie	cormorants	Pictou
Antigonish Harbour	waterfowl	Antigonish
Debert	waterfowl	Colchester
Dewey Creek	waterfowl	Kings
Eastern Shore Island	seabirds	Guysborough-Halifax
Kelly Lake	salmonids	Halifax
Minas Basin	Canada goose	Kings
Pearl Island	seabirds	Lunenburg
Scatarie Island	Arctic hare, ptarmigan	Cape Breton
Shubenacadie	(various)	Colchester
Tobeatic	beaver	Digby, Yarmouth, Shelburne, Queens

The department manages an outdoor education area at Manganese Mines in Colchester County.

Provincial Sanctuaries

Blandford—Lunenburg County
 Chignecto—Cumberland County
 Debert—Colchester County
 Liscomb—Halifax and Guysborough counties
 Martinique Beach—Yarmouth County
 Melbourne Lake—Yarmouth County
 Spectacle Island—Victoria County
 Sunnybrae—Pictou County
 Two Rivers—Cape Breton
 Upper Clements—Annapolis County
 Waverley—Halifax County

PARKS AND RECREATION DIVISION

The provincial parks program continued to play a significant role in the social and economic development of the province. Through provision of a variety of outdoor recreational facilities, a well-distributed system of parks provided Nova Scotians with the opportunity for enjoyable and valued experiences.

Tourism relies on the availability of public parks, which protect and provide access to resource land and contain high-quality facilities for outdoor recreation and heritage appreciation. Provincial parks play an

important role in maintaining the image of Nova Scotia as an attractive tourist destination.

ORGANIZATION

The provincial park system is administered by the Parks and Recreation Division in Debert and by the Operations Branch from its eight subdivisions and 21 district offices throughout the province. The Parks and Recreation Division is responsible for planning the park system and its individual parks, and for preparation of standards and procedures for development and operation. The Operations Branch is responsible for park maintenance, operation and policing and, under guidance from Parks Division staff, does most capital construction. The capital budget is administered by the division, which also manages large construction projects.

THE PARK SYSTEM

In 1985, 19 campgrounds and 80 beach and picnic parks were provided for the public. Additional picnic facilities were available at the Shubenacadie Wildlife Park, the Two Rivers Wildlife Park and at Balmoral Grist Mill. Total operational parkland equalled 17,383 acres (7 035 ha), with an additional 30,573 acres (13 373 ha) held in reserve.

During 1985-86, properties totalling 992.3 acres (401.9 ha) were acquired. Of this total, 839.9 acres (339.9 ha) were acquired in the counties of Queens, Shelburne and Yarmouth as part of the former Canadian National Railways right-of-way. Other acquisitions include 55.1 acres (22.3 ha) at Melford, Inverness County, and 52 acres (21.3 ha) at Long Lake, Halifax County.

Provincial camping parks opened on May 17 and remained open until October 8 (Thanksgiving Day). Camping fees were set at \$6.00 per night, and firewood was sold for \$1.00 per bundle. Day-use facilities were available to the public at no charge. Total revenue was \$227,597.

Park Use

A summary of 1985-86 campground-user statistics shows that the park system's 1,425 campsites accommodated an estimated 123,707 persons for 42,954 party nights. These figures are down approximately six percent from the previous year. The average number of campers per permit was 2.88, and the average length of stay was 1.77 nights.

Although a detailed record of day visitation was not prepared in 1985-86, available information suggests that day-use provincial parks,

including wildlife parks, receive approximately 1.5 million person-visits annually.

Project Planning and Development

The total divisional budget for planning, development and administration was \$2,112,400. This funding results in planning and development being carried out on 48 park sites. This required planning inputs ranging from site assessments to development of management concepts and preparation of detailed site-development plans. Examples of these projects include:

Park	County	Development
Black Property	Cumberland	Construction of campground roads and maintenance building
Dollar Lake	Halifax	Construction of day-use beach facilities and new road
Dominion Beach	Cape Breton	Construction of parking lot, bridge and boardwalk
Ellenwood Lake	Yarmouth	Improvements to day-use area
Lawrencetown Beach	Halifax	Construction of core facilities and parking lot
Shubenacadie Wildlife	Colchester	Construction of bear pen

Major Park Planning Projects

The department annually undertakes a wide range of planning projects and initiatives which guide the development and management of new or existing provincial parks, or which assist in identifying new opportunities for inclusion in the provincial parks program.

A comprehensive review of the N.S. Parks and Outdoor Recreation Program was prepared as a basis for the establishment of an updated provincial parks policy.

A major planning exercise is continuing at Dollar Lake Provincial Park to facilitate construction of a large destination park capable of attracting visitors from throughout Nova Scotia. When completed, the park will provide a wide range of outstanding outdoor recreational opportunities, including camping, swimming, boating and hiking.

A planning exercise was initiated to identify potential sites for a new provincial campground in the vicinity of Cape Chignecto, Cumberland County.

The department provided support services in reference to public hearings on the selection of a site for a provincial park campground in

Queens County. This review process led to the identification of Sandy Bay as the preferred site.

A resource-management planning process has been developed by the Parks and Recreation Division and is being tested in association with the Forest Management Planning Section in the department's eight subdivisions. This approach to resource planning ensures that outdoor recreation and heritage-resource management considerations are taken into account during the forest-management planning process.

The department has assumed formal responsibility for the administration of McNabs Island from the Department of Development, prepared a preliminary management concept for the island and initiated discussions with Parks Canada in reference to the transfer of certain federal lands on the island to the province.

As part of the ongoing program to collect resource-inventory data for provincial parks and candidate park lands, vegetation inventories which include data on geology, soils, vegetation and their interrelationships, were completed for Five Islands, Cole Harbour/Lawrencetown, Long Lake, and McNabs Island, and four additional inventories were initiated.

The division completed a report based on the survey of some 470 Nova Scotia beaches. The report was prepared as a basic reference document to support the efforts of an interdepartmental committee established by Policy Board to examine beach management problems.

Facilities for the Handicapped

The program of making park facilities accessible to the handicapped was continued, with special facilities providing outdoor recreation opportunities for handicapped persons being opened at Lewis Lake Provincial Park, Halifax County, in July 1985. These facilities were nominated by the Canadian Paraplegic Association for the Canadian Parks and Recreation Association's "Facility Excellence Award."

Additional day-use facilities for the handicapped were also provided in several other provincial parks scattered throughout Nova Scotia. A handicapped campsite and associated facilities were developed at Porter's Lake Provincial Park.

Co-operative Initiatives

The division works co-operatively with three other provincial departments to co-ordinate program activities involving outdoor recreation and heritage resources. This occurs through the Parks, Heritage Resources and Outdoor Recreation Standing Committee as established by the

Deputy Minister's Committee on Land Use Policy and involves the following departments: Lands and Forests; Education (N.S. Museum); Culture, Recreation and Fitness; and Tourism. The committee prepared an attractive poster-style brochure explaining Nova Scotia's outdoor recreation and heritage programs, for public distribution. The *Natural History of Nova Scotia*, also prepared on an interdepartmental basis and within the framework of this standing committee, was nominated for a Nova Scotia Environmental Control Council award.

The division works co-operatively in support of the Province's Special Places Program and prepared draft management policies and practices to protect known ecological sites on Crown land. The department also participates directly in the Province's Special Places Program through membership on the Special Places Advisory Committee.

The division participated on the project management committee for the Northumberland Shore beach development study, a project funded under the Canada-Nova Scotia Tourism Subsidiary Agreement.

The department, through the Parks and Recreation Division, continued to represent the Province as a participant in the Canadian Heritage Rivers Program, and has completed initial proposals for a comprehensive study of potential heritage rivers in Nova Scotia. This is a joint effort involving both the department and Parks Canada.

LAND SERVICES BRANCH

The Land Services Branch consists of the following: the Surveys Division, the Land Acquisition and Registry Division, and the Provincial Crown Lands Record Centre.

Briefly, the primary objective of the Surveys Division (424-5020) is to survey, monument and map the Crown lands administered by the department and to maintain surveyed Crown land boundaries. It has the following secondary objectives: to survey land for purchase or expropriation; to provide a drafting and mapping service in support of departmental programs; to survey lands which the department wishes to protect for environmental, recreational or cultural purposes; to provide a surveying service to other government departments or agencies; and to acquire aerial photography.

The Land Acquisition and Registry Division (424-4267) is responsible for the acquisition and disposal of Crown lands administered by the Department of Lands and Forests, and acts on behalf of other departments and agencies in the acquisition and disposal of land. The division prepares all legal documentation related to deeds, leases, grants, licenses, certificates, and letters of authority.

Necessary legal and other documentation for the Beaches Preserva-

tion and Protection Act, Land Titles Clarification Act, Land Holdings Disclosure Act, and Parks Development Act are prepared by the division. A large number of expropriations are carried out in co-operation with the expropriating authority.

All quieting of titles actions are referred to the division prior to court proceedings to determine if the Department of Lands and Forests has an interest in the action.

The Registry and Research Section of the division acts as custodian for all Crown land records dating back to 1730. Thousands of inquiries from the public related to land title problems are handled annually.

The division is responsible for the investigation and settlement of claims to ungranted land.

The Provincial Crown Lands Record Centre, 45 Alderney Drive, Queen Square, Dartmouth (424-8680), co-ordinates and consolidates information related to all provincial land holdings for all government departments and agencies (including boards, corporations and commissions). It updates the Crown Land Record and Resource Series Maps; it microfilms and stores related deeds, leases and rights-of-way; and it provides statistical data for departments and agencies. These data are required to co-ordinate acquisition and disposal of land and to develop land-use policies and plans.

On request, the Provincial Crown Lands Record Centre also provides these types of statistical data and visual-display materials to the public and to federal or municipal departments and agencies.

SURVEYS DIVISION

ADMINISTRATION

The Administration Section is made up of four persons in management and a support staff of nine. The support group is made up of secretarial services, and plan examination, drafting and research groups.

Requests for surveys numbered 169, for which orders of survey were issued to the survey field staff. During the period, 140 returns of survey were received from the field, and 185 survey plans were inspected, approved, processed and filed.

One hundred plans and descriptions were prepared and approved pursuant to Section 30(1) of the Lands and Forests Act. These form part of a Certificate of Release issued by the Crown, asserting no interest or claim to the corresponding parcel of ungranted land. In addition, plans were drafted for 84 leases, 11 grants and 10 legal surveys.

During the period, documentation and mapping was prepared for the turnover of 7,086 acres (2 868 ha) of Crown land under the provision of

the Nova Scotia Pulp Limited Agreement Act. Total area under license and turned over to the company to date is 1,351,296 acres (546 869 ha).

The section negotiated a contract with Atlantic Canada Airborne Sensing of Amherst for vertical colour aerial photography, for forest inventory purposes, of the counties of Cumberland and Colchester.

The Surveys Division provided inspection of condominium plans on behalf of the Registrar of Condominiums. During the period, plans were inspected and field checks carried out on 23 condominium projects.

CROWN LAND SURVEYS

The total area of Crown land surveyed during the year was 29,586 (11 973 ha). This required 182 miles (293 km) of boundary line, 101 miles (162.5 km) of trial line and 151 miles (243 km) of tie line to the Nova Scotia Control Survey and the placing of 923 survey monuments. To date, Crown land surveyed and monumented totals 3,478,682 acres (1 407 823 ha). Distribution of Crown land surveyed during 1985-86:

County	Acres	Ha	County	Acres	Ha
Annapolis	178	72	Hants	1,688	683
Antigonish	128	52	Inverness	1,995	807
Cape Breton	474	192	Lunenburg	1	1
Colchester	14,177	5 737	Pictou	489	198
Cumberland	643	260	Queens	789	319
Digby	254	103	Richmond	323	131
Guysborough	4,509	1 825	Shelburne	1,981	802
Halifax	1,195	484	Victoria	703	284
			Yarmouth	59	24
			TOTAL	29,586	11 974

Related survey work includes site surveys for construction purposes, lots surveyed within the Land Titles Clarification areas, surveys taking cross sections on beaches for assessment of buildup and erosion, setting of targets on survey monuments for control of mapping from aerial photographs, surveys for leases, conveyances, proposed purchases, trades, boundary disputes, rights-of-way, trespass, and investigation of claims. A total of 28 surveys fell within the scope of these categories.

Boundary Line Maintenance

During the period, 430 miles (692 km) of boundary line were renewed by Surveys Division staff and 531 survey monuments were replaced. Opera-

tions staff assisted in the program and renewed 105 miles (169 km) of boundary.

In total, 535 miles (861 km) of boundary were maintained.

SPECIAL PROJECTS SURVEYS

The Special Projects Surveys Section is responsible for surveys that generally fall outside the scope of the Crown Land Surveys program. This includes engineering surveys, and surveys for land protection, purchases and expropriations.

During the year, 31 Special Projects surveys were completed and include surveys for the Department of Government Services and the Department of Development as well as for the Department of Lands and Forests.

MAPPING

The mapping section is composed of three groups: Photogrammetry, Cartography, and Reproduction.

Photogrammetry

This group consists of two photogrammetric technicians with an A-8 stereographic plotter, a co-ordinograph, a digitizer and computation equipment. Mapping in manuscript form was completed for six sites in the province. The areas are: Long Lake Watershed/Park, Spryfield and Halifax County, all completed at 1:1 200 scale; Victoria Line, Inverness County, at 1:1 200 scale; Graves Island Provincial Park, Lunenburg County, at 1:1 200 scale; Groves Point, Cape Breton County, at 1:1 200 scale; Lewis Lake Provincial Park, Halifax County, at 1:2 500 scale; Lingan Beach Extension, Cape Breton County, at 1:600 scale.

Quality inspection of aerial photography flown at 1:10 000 scale for Cumberland and Colchester counties was carried out during a one-month period by one photogrammetric technician.

Cartography

The cartographic group consists of three units—orthophoto mapping, special assignments, and Crown land property mapping—employing nine drafting technicians.

Orthophoto Unit

The Orthophoto Unit, with three drafting technicians, continued with a program of developing a series of Forest Inventory map sheets on the 1:10 000 orthophoto resource base. During the period, plotting was completed on 75 sheets in the Western Subdivision. This gives a new project total of 1,329 map sheets plotted. Additional revisions were required on 139 map sheets in Cape Breton and Richmond counties to complete Cape Breton Island.

During the year, 92 manuscripts and 50 scribe-coats were updated in Halifax and Hants counties.

One hundred and forty-three final film positives were produced by this unit in conjunction with the photomechanical darkroom, enabling whiteprints to be reproduced, showing Crown land boundaries on the orthophoto base maps.

The unit completed, checked and edited the plotting of Crown land in central and western Nova Scotia that was later used to update the 1985 edition of the *Nova Scotia Map Book*.

Special Assignment Unit

The Special Assignment Unit, with three drafting technicians, carried out research, plotting and updating of 220 map sheets, showing Nova Scotia Pulp Limited licensed Crown land (Stora) in the seven eastern counties, and the updating of 542 maps showing Crown boundary lines.

The location of 60 campsite leases was plotted on the Nova Scotia Pulp Limited licensed Crown land maps for seven eastern counties.

Four special maps for spruce budworm and two for gypsy moth assessment were completed. Acreage calculations were done for spraying of spruce budworm for the Entomology Section, Truro.

Twenty-nine other special projects were undertaken, including the checking of place-name corrections and highway classifications for the new *Nova Scotia Map Book*.

Crown Land Property Mapping Unit

The Crown Land Property Mapping Unit, with three drafting technicians, has the responsibility of identifying, on provincial base maps, all lands under the administration and control of the Department of Lands and Forests.

Approximately 450 revisions to the Crown land data base were carried out on the existing 1:15 840-scale map series. Property mapping of Crown grants was completed in the area of the Town of Port

Hawkesbury to facilitate the settlement of claims to ungranted land. Interpretation and classification of boundaries for provincial park land and wildlife management areas were provided to the Department of Mines and Energy on areas under license for mineral exploration.

Reproduction

The reproduction group is composed of the darkroom, the air photo library, and the map reproduction units and has three staff members.

Darkroom

The darkroom, using a photomechanical contact process vacuum frame, produces film positives, negatives and papers required by the cartographic group in the revision of existing plans and the production of large-scale and orthophoto forest-type mapping. In this fiscal year, 342 requests were received, which required the processing of 1,540 pieces. This included work for the plotting of Crown land boundaries, for insect infestation maps, for legal survey plans, section 30(1) certificates of claim, park plans, etc. Thirty-one pieces of material were processed for other government departments.

Air Photo Library

The Air Photo Library is stocked with some 195,000 aerial photographs, which provide coverage of the entire province and date from 1927 to the present. Members of the general public frequently visit the library, but the photographs are provided as a viewing service only. Assistance is given in ordering prints from the National Air Photo Library, Ottawa, or from the Maritime Resource Management Service in Amherst. This service is also extended to other government departments and agencies. During the past year, staff dealt with approximately 1,650 requests.

Map Reproduction Unit

The Map Reproduction Unit is administered by the same staff as the Air Photo Library and has on file almost all the film positives of the departmental map sheets, as well as reproducible orthophoto resource and large-scale urban map sheets provided by the Land Registration and Information Service (LRIS), Summerside, P.E.I., with approximately 20,670 map tracings now on file.

During the year, the unit received 72 topographic and 72 planimetric film tracings at a scale of 1:1 000 which cover portions of the cities of

Halifax and Dartmouth.

Originally, the Map Reproduction Unit was created to provide a reproduction service for departmental use only. During the past 18 years, service has gradually expanded to meet the demands of the general public and other government agencies. Service demand during the past year (5,946 requests) resulted in approximately 31,450 map sheets being reproduced, of which 22,375 were for departmental use. Approximately 9,075 were sold to the general public and other government agencies, which generated revenue of \$25,000 in the 1985/86 fiscal year.

LAND ACQUISITION AND REGISTRY DIVISION

LAND ADMINISTRATION

Transfers

The administration and control of 34 parcels of Crown land was transferred to other provincial departments and to the federal government.

Grants

There were seven grants issued during the fiscal year, involving approximately 10.75 acres (4.35 ha).

Deeds

Eleven deeds were issued, involving approximately 839.25 acres (340 ha).

Letters of Authority

Sixty letters of authority were prepared for mineral exploration, construction purposes and a variety of domestic purposes.

Beaches

Two areas were designated as beaches under the Beaches Preservation and Protection Act.

Parks

One area was designated a provincial park under the Provincial Parks Act.

Certificates—Land Titles Clarification Act

Twenty-six certificates of title were issued under the Land Titles Clarification Act. These certificates were issued in the communities of:

Community	County	Number
East Preston	Halifax County	4
Neils Harbour—New Haven	Victoria County	13
Little Lorraine	Cape Breton County	2
Sampsons Cove—Little Anse	Richmond County	1
Drumhead—Seal Harbour	Guysborough County	5
Little Dover	Guysborough County	1

Certificates—Lands and Forests Act

Seventy certificates were issued under Section 30(1) of the Lands and Forests Act. These certificates released the Crown's interest in approximately 14,134.13 acres (5 720 ha) of land; 8,917.30 acres (3 609 ha) of ungranted land were confirmed as Crown land.

Tenders

Sixty-one tenders were called during the fiscal year, including five parcels for stumpage, 21 parcels of sawlogs, four parcels for Christmas trees, three parcels for felled hardwood, two parcels for pulpwood, and 26 special tenders. The special tenders called concerned the following parcels:

Blueberry	1
Tree planting	7
Access roads	10
Rome disc	1
Lumber complex feasibility study	1
Brush raking	1
Group management ventures	1
Canteen concession	2
Spray aircraft	1
Guidance aircraft	1
TOTAL	26

Timber Licenses

Six timber licenses were issued for cutting Crown land stumpage.

Leases

Fifty-eight leases involving approximately 203.24 acres (82.25 ha) of land were issued, as follows:

Campsite leases	46
Special leases <i>including</i>	12
Radio tower site	1
Recreation	6
Tourist bureau site	1
Fish gear shed site	1
Blueberry	1
Docking facility	1
Barn site	1

Trespasses

Thirteen trespasses on Crown land were reported.

Fisherman's Reserves

One permit was issued at Three Fathom Harbour, Halifax County.

LAND REGISTRY AND RESEARCH

Approximately 2,300 requests from the public, provincial and federal government departments, and department staff were processed. Some 1,200 requests required searching Land Registry and Research Records, and about 1,000 required a written reply, along with copies of old records.

The section recorded and/or posted 557 documents: 46 land purchases, 60 disposal documents, 84 confirmed Crown papers, 61 Section 30(1) Certificates, eight grant documents, 61 lease documents, 41 rejected petitions, 23 certificates of title under the Land Titles Clarification Act, 73 survey plans, and 100 contracts and agreements. The following items were microfilmed, jacketed and indexed: (a) Crown land correspondence for the years 1926-29, (b) old plans numbers from 1-2157, and (c) original grant books Nos. 6, 14, 15, 17, 18, 19 and 20.

Several Index Sheets were revised; 379 petition numbers were issued; 77 miscellaneous drafting assignments were carried out; 27 lots were plotted on aerial photos for the Claims Section; and 86 quieting of titles files were dealt with.

For the location of Crown land to date, and area and extent of lands

reconveyed to the Crown, see Tables 16-18, Appendix.

PROVINCIAL CROWN LANDS RECORD CENTRE

Pertinent information and documents relating to land holdings of 20 government departments and agencies were received by the centre. Title, legal and statistical information relating to 27,604 parcels of land have been processed, and the location and land use of properties have been plotted on series maps. Records of these transactions—indentures, deeds, abstracts, and certificates of title, where available—have been microfilmed and the documents have been stored.

A report on the Nova Scotia Hospital property in Woodside was completed. The document comparison program was continued in the Registry of Deeds Office at Pictou. Two summer students did an excellent job and uncovered previously unreported documents. The design and testing phases of the computerized land-information data base have been completed. The uploading of the hard-copy data is proposed for the coming year, with a projected completion date in 1987.

OPERATIONS BRANCH

The Operations Branch is responsible for implementing and maintaining the department's programs in forest fire control; protection of beaches, fish and wildlife; enforcement of fish and game regulations; management of Crown lands, including timber sales and forest improvement; administering programs of assistance to private woodland owners, including a management advisory service; constructing and operating provincial parks and other outdoor recreation areas; administering designated game sanctuaries; providing field assistance in planning, data collection, and other services in Crown land administration and resource education; and the gathering of statistics on forest resource use.

The branch functions through its senior staff located in Halifax and Shubenacadie and through eight geographical subdivisions.

The Provincial Forest Fire Control Centre, P.O. Box 130, Shubenacadie, N.S. B0N 2H0 (758-2232) is responsible for the acquisition, distribution, and maintenance of fire control equipment, the motor vehicle fleet, and heavy equipment. The Fire Control Centre is also responsible for the operation and maintenance of the Integrated Mobile Radio System servicing user departments and agencies of government; hospitals; ambulances; fire departments; and the RCMP.

The province is divided into 80 roughly equal geographical subdivisions, each staffed with a resource manager, a Crown lands forester, a private lands forester and, in most cases, a biologist. Within the sub-

divisions are districts headed by supervisors and staffed by forest technicians, field clerks, maintenance personnel, and forestry crews. This staff implements the Operations Branch programs.

OPERATIONS FIELD OFFICES

WESTERN

(Yarmouth, Digby and Shelburne counties)

10 Starr's Road
Yarmouth, N.S.
B5A 2T1
(742-4196)

P.O. Box 369
Shelburne, N.S.
B0T 1W0
(875-2501)

P.O. Box 367
Digby, N.S.
B0V 1A0
(245-2164)

Kemptonville Depot
Kemptonville, N.S.
B0W 1Y0
(761-2227)

SOUTH SHORE

(Queens and Lunenburg counties)

99 High Street
Provincial Building
Bridgewater, N.S.
B4V 1V8
(543-8167)

McGowan Lake Depot
Caledonia, N.S.
(242-2550)

P.O. Box 190
Milton, N.S.
B0T 1P0
(364-3462)

Wiles Lake Depot
Bridgewater, N.S.
(543-2394)

Chester Grant Depot
Chester, N.S.
(275-3574)

VALLEY

(Annapolis and Kings counties)

120 Exhibition Street
Provincial Building
Kentville, N.S.
B4N 4E5
(678-8907)

P.O. Box 130
Lawrencetown, N.S.
B0S 1M0
(584-2229)

SOUTH CENTRAL

(Halifax and Hants counties)

Box 23, Site 2
RR#1, Waverley, N.S.
B0N 2S0
(861-2560)

Musquodoboit Harbour, N.S.
B0J 2L0
(889-2332)

Middle Musquodoboit, N.S.
B0N 1X0
(384-2290)

P.O. Box 130
Shubenacadie, N.S.
(758-3437)

Stanley Hangar
RR#1, Scotch Village, N.S.
B0N 2G0
(372-2410)

P.O. Box 190
Windsor, N.S.
B0N 2T0
(798-2016)

Lewis Lake Depot
RR#3, Armdale, N.S.
B3L 4J3
(876-2308)

NORTH CENTRAL

(Cumberland and Colchester counties)

626 College Road
Bible Hill, N.S.
B2N 2R2
(895-6325)

P.O. Box 130
Oxford, N.S.
B0M 1P0
(447-2115)

P.O. Box 428
Parrsboro, N.S.
B0M 1S0
(254-3241)

EASTERN

(Pictou, Guysborough and Antigonish counties)

11 James Street
Provincial Building
Antigonish, N.S.
B2G 1R6
(863-4513)

P.O. Box 50
Guysborough, N.S.
B0H 1N0
(533-3503)

RR#2, Aspen
Guysborough Co., N.S.
B0H 1E0
(522-2024)

603 Maritime Building
New Glasgow, N.S.
B2H 2P9
(752-3181)

Antigonish Depot
(863-1502)

MacLellan's Brook Depot
(752-5247)

North Riverside Depot
Guysborough, N.S.
(533-3333)

CAPE BRETON NORTH
(Inverness and Victoria counties)

P.O. Box 68
Baddeck, N.S.
BOE 2H0
(295-2554)

P.O. Box 130
Whycocomagh, N.S.
BOE 3M0
(765-2339)

CAPE BRETON SOUTH
(Richmond and Cape Breton counties)

Coxheath Depot
RR#6, Sydney, N.S.
B1P 6T2
(564-6389)

Provincial Building
St. Peter's, N.S.
BOE 3B0
(535-2032)

CROWN LAND FOREST MANAGEMENT

CROWN LANDS UNDER WOOD SUPPLY AGREEMENTS

Stora Forest Industries, Port Hawkesbury

The 50-year license agreement (wood supply and forest improvement) with Stora Forest Industries covers 1,351,296 acres (546 862 ha) of Crown land in the seven eastern counties with additional area being added yearly until a total of 1,500,000 acres (607 042 ha) has been placed under company management.

In the calendar year 1985, 173,206 cords (627 796 m³ (stacked)) of softwood pulpwood and 6,815 (24 701 m³ (stacked)) of hardwood pulpwood were delivered to the mill from Crown lands. Of the softwood pulpwood, 52,305 cords (189 582 m³ (stacked)) were salvaged from insect-damaged material. There were also 39,913 cords (144 667 m³ (stacked)) of salvaged softwood pulpwood delivered to the mill from storage (provincial stockpile wood).

In addition, 395,590 board feet (2 234 m³) of softwood sawlogs, 188,650 board feet (1 065 m³) of hardwood sawlogs, 124 cords (449 m³ (stacked)) of hardwood pulpwood, 450 cords (1 631 m³ (stacked)) of softwood pulpwood, and 1,719 cords (6 231 m³ (stacked)) of hardwood fuelwood were produced for sale elsewhere. The agreement calls for an

average annual allowable harvest of 330,000 cords (1 196 105 m³ (stacked)).

Under the Forest Resource Development Agreement, funding was available for silviculture treatments on Crown lands. Under the company's license agreement, the Province returned to the company a stumpage rebate for assistance in forest improvement work. During 1985 the following treatments were carried out: 9,266 acres (3 750 ha) of site preparation, 6,696 acres (2 710 ha) of planting, 7,519 acres (3 043 ha) of weeding, 4,104 acres (1 661 ha) of cleaning and 44 acres (18 ha) of remnant felling salvage.

All harvesting and forest improvement proposals are submitted to the department for prior approval in the form of annual cutting plans and annual silviculture plans. These show in detail the stands to be harvested or treated silviculturally. Field checks are made by the department staff before approvals are given. A second check is made by field staff during operations on approved jobs.

E.M. Comeau and Sons (1977) Limited, Meteghan, Digby County

This agreement, which was signed on December 6, 1976, gave the company the right to cut stumpage on Crown land in the Blackadar Management area of Digby County for a period of 10 years, commencing September 1, 1975. This agreement expired on August 31, 1985, and a 10-year renewal is presently under review. During 1985 the company cut 309,061 board feet (1 746 m³) of softwood sawlogs; 27,438 board feet (155 m³) of hardwood sawlogs; 418 cords (1 515 m³ (stacked)) of softwood pulpwood, 184 cords (667 m³ (stacked)) of hardwood lathwood, and 540 cords (1 957 m³ (stacked)) of hardwood fuelwood.

E.M. Comeau and Sons (1977) Ltd. also signed a second agreement on October 8, 1985, which gave the company the right to cut stumpage on Crown land in the Richfield and Snare Lake areas of Digby County for a period of 10 years, commencing January 1, 1985.

The company cut 113,288 board feet (640 m³) of softwood sawlogs, 54 cords (196 m³ (stacked)) of softwood pulpwood, and 15 cords (54 m³ (stacked)) of hardwood fuelwood under this second agreement.

Long Lake Lumber Limited, Shelburne

This company has two stumpage agreements on Crown lands. The first agreement was signed on January 1, 1979, and gave the company the right to cut stumpage on Crown land in five areas of Shelburne County for a period of 10 years.

The company cut 660,127 board feet (3 729 m³) of softwood sawlogs

and 167 cords (605 m³ (stacked)) of hardwood fuelwood under the 1979 agreement.

The second agreement was signed on April 8, 1982, and gives the company the right to cut stumpage on a 1,230-acre (498-ha) block of Crown land at Middle Ohio for a period of 10 years, terminating December 31, 1991. However, no stumpage was cut on this agreement during 1985.

Harry Freeman and Sons Ltd., Greenfield, Queens County

This license agreement signed January 1, 1979, allows the company to cut 300,000 board feet (1 695 m³) of sawlog stumpage each year during the full term of the agreement on a block of Crown land in Queens County. An amending agreement was signed on October 13, 1983, which gave the company the right to cut 100,000 board feet (565 m³) of sawlogs per year on approximately 865 acres (350 ha) of Crown land in Shelburne County.

During 1985 the company cut 443,244 board feet (2 504 m³) of softwood sawlogs, 12 cords (43 m³ (stacked)) of softwood pulpwood, and 40 cords (145 m³ (stacked)) of hardwood fuelwood from Shelburne County. There was no cutting carried out in Queens County under this agreement during 1985.

Lewis Lumber Company Limited, Weymouth, Digby County

This company signed a stumpage agreement which gave it the right to cut stumpage on several areas of Crown land in Digby and Shelburne counties for a period of 10 years, commencing October 1, 1985. The company cut 339,464 board feet (1 918 m³) of softwood sawlogs during 1985, and all cutting took place in Shelburne County.

Caledonia Woodworkers Limited, Caledonia, Queens County

This agreement, signed on August 4, 1979, gives the company the right to cut stumpage on Crown land for a period of 10 years, commencing January 1, 1979. This company signed a second agreement for a term of 10 years, commencing in January 1984 and ending in December 1993.

During 1985 the company cut 1,417,705 board feet (8 010 m³) of softwood sawlogs, 85 cords (308 m³ (stacked)) of hardwood pulpwood, and 1,038 cords (3 762 m³ (stacked)) of softwood pulpwood.

Ledwidge Lumber Company, Enfield, Hants County

This agreement, signed on June 4, 1984, gives the company the right to cut 10 million board feet (56 497 m³) of stumpage on Crown lands over a period of 10 years, commencing January 1, 1984.

During 1985 the company cut 334,880 board feet (1 892 m³) of softwood sawlogs, 429 cords (1 555 m³ (stacked)) of softwood pulpwood, 553 cords (2 004 m³ (stacked)) of hardwood fuelwood, 1,355 cords (4 911 m³ (stacked)) of studwood and 220 cords (797 m³ (stacked)) of softwood pulpwood.

Taylor Lumber Company, Middle Musquodoboit, Halifax County

This license agreement, signed on October 5, 1984, gives the company the right to cut 10 million board feet (56 497 m³) of stumpage on Crown lands over a period of 10 years, commencing January 1, 1984. During 1985 the company cut 547,790 board feet (3 095 m³) of softwood sawlogs, 1,130 cords (4 096 m³ (stacked)) of softwood pulpwood, and 326 cords (1 182 m³ (stacked)) of hardwood fuelwood.

Elmsdale Lumber Company, Elmsdale, Hants County

This 10-year license agreement, signed on May 19, 1977, allows the company an average maximum annual cut of 240,000 ft.³ (6 796 m³) of softwood and hardwood. During 1985 the company cut 1,114,440 board feet (6 296 m³) of softwood sawlogs.

Barrett Lumber Company Limited, Sackville, Halifax County

This license agreement allows the company to harvest forest products from August 1979 until such time as it has received 742,842 board feet (4 196 m³).

During 1985 no material was harvested under this agreement.

G. Royce Hefler Limited, Lower Sackville, Halifax County

This license agreement allows the company to cut a maximum of 50,000 ft.³ (1 416 m³) of merchantable softwood and hardwood per year so as to include a total of 1.2 million board feet (6 779 m³) of sawlogs during the 10-year term of the agreement (September 8, 1977-September 7, 1987). During 1985 there was no wood cut under this agreement.

Hoeg Brothers Lumber Limited, Athol, Cumberland County

This agreement, signed on May 6, 1981, gives the company the right to cut stumpage on Crown lands for 10 years, commencing January 1, 1981.

During 1985 the company received 1,055,820 board feet (5 965 m³) of softwood sawlogs, 637 cords (2 308 m³ (stacked)) of softwood studwood, 203 cords (736 m³ (stacked)) of hardwood pulpwood, and 2,029 cords (7 354 m³ (stacked)) of softwood pulpwood.

Canexel Incorporated, East River, Lunenburg County

The 10-year stumpage and roundwood sale agreement with Canexel signed in December 1976 calls for the Crown to supply the mill with 10,000 cords (36 246 m³ (stacked)) of wood (75 percent hardwood) on the company's request. Also, the company can extract 15,000 cords (54 368 m³ (stacked)) annually from Crown lands in the counties of Hants, Halifax Annapolis, Kings, Lunenburg, Queens, Shelburne, Yarmouth and Digby — which are especially allocated by the Province, via five-year management plans. This agreement also requires the company to submit annual cutting plans for its licensed lands.

Canexel purchased 12,360 board feet (70 m³) of softwood sawlogs, 1,050 cords (3 806 m³ (stacked)) of hardwood pulpwood, and 118 cords (428 m³ (stacked)) of softwood pulpwood from the Crown.

Scott Maritimes Limited, Abercrombie Point, Pictou County

This agreement gives the company the right to cut stumpage on Crown lands for 50 years, commencing in 1966. This agreement provides for the average production of 50,000 cords (181 228 m³ (stacked)) annually. During the calendar year 1985, 3,919,000 board feet (22 141 m³) of softwood sawlogs, 3,931 cords (14,248 m³ (stacked)) of hardwood pulpwood, 26, 756 cords (96 978 m³ (stacked)) of softwood pulpwood and 2,842 cords (10 301 m³ (stacked)) of hardwood fuelwood were produced from 203,000 acres (82 153 ha) under the agreement.

Under an annual agreement, this company received a stumpage rebate for the performance of silviculture on the licensed Crown land. During 1985, Scott Paper Company carried out the following silviculture treatments on Crown lands: 121 acres (49 ha) of planting, 120 acres (48 ha) of site preparation, 120 acres (48 ha) of burning and 14 acres (6 ha) of cleaning.

All activities to be carried out on these lands must be submitted to the department for prior approval in the form of a five-year management

plan. This plan must follow the guidelines agreed upon by the company and the province and, in general, show where operations are to take place, what products are to be extracted, and the proposed road construction. These areas are checked in the field by department staff, and approval or otherwise is recommended. The annual cutting plan and annual silviculture plan identify the specific locations of various operations.

Kingston Lumber and Building Supplies Limited, Kingston, Kings County

This license agreement grants the company the right for a term of 10 years, commencing on January 1, 1982, to cut 300,000 board feet (1 695 m³) of sawlogs or studwood stumpage annually from those stands on Crown lands designated by the Province.

In 1985 the company cut 385,809 board feet (2 180 m³) of softwood sawlogs, 102 cords (370 m³ (stacked)) of hardwood pulpwood, 28 cords (101 m³ (stacked)) of softwood pulpwood, and 2,176 lineal feet (633 m) of poles. The softwood sawlog volume in excess of the annual allowable cut was approved prior to the cut to provide for operating efficiency and to offset previous undercutting.

An additional 216,451 board feet (1 222 m³) of softwood sawlogs was cut by the company in an area infested by bark beetle.

Sproule Lumber Limited (Riversdale Lumber Ltd.), Truro, Colchester County

This 10-year stumpage agreement expired in November 1984 and was renewed for a further 10-year period to November 28, 1994. This agreement gives the company the right to cut 5,750,000 ft.³ (162 822 m³) of wood products in Colchester and Halifax counties during the first five years. For the remaining five years of this agreement the company is granted the right to cut a maximum of 1.5 million ft.³ (42 475 m³) of wood per year (exclusive of any deficiency carried over from the initial five-year period).

In 1985 the company cut 2,179,070 board feet (12 311 m³) of softwood sawlogs; 28,503 board feet (161 m³) of hardwood sawlogs; 723 cords (2 260 m³ (stacked)) of softwood studwood; 6,186 cords (22 421 m³ (stacked)) of softwood pulpwood; 2,285 cords (8 282 m³ (stacked)) of hardwood pulpwood, making a total cut of 1,174,234 ft.³ (33 251 m³).

Nova Scotia Forest Products Association—Access Road Program

This program, administered by the Nova Scotia Forest Products Associa-

tion, was initiated in 1967. It provides assistance to forest operators to build access roads for harvesting forest products, to carry out forest improvement work and to improve access for fire fighting. The assistance is in lieu of refunding the tax on gasoline and diesel fuel paid by forest operators for off-highway hauling.

In 1985, 533 applications were received, of which 453 applicants received assistance and completed their work under the program.

A total of 168 miles (270 km) of new forest access roads were built, requiring 66,844 cubic yards (51 102 m³) of gravel and six new bridges. An additional 129 miles (207 km) were upgraded using 17,371 cubic yards (13 280 m³) of gravel. Assistance totalled \$805,000 on completed applications.

UNLEASED CROWN LANDS

Most of the unleased Crown lands are situated in the central and western parts of the province. The larger units or blocks have been placed under management plans drawn up in consultation with the Forest Planning Branch.

Access Roads

A total of 53.5 miles (86 km) of forest access road was constructed during the year. The construction consisted of five miles (8 km) of Class B; 32.1 miles (52 km) of Class C; and 16.4 miles (26 km) of Class D roads. There were also hydrology studies completed on 23 stream-crossing sites, resulting in the design of nine bridges and 14 box or round culvert crossings.

Approximately 120 acres (48 ha) of roadside grass seeding was completed on 40 miles (64 km) of road right-of-way, after road construction was completed.

Stand Improvement

The following stand improvement was carried out on unleased Crown lands:

Treatment	Acres	Ha
Site preparation	863	349
Planting	1,338	541
Weeding	2,499	1 011
Salvage	183	74
Regeneration cut	704	285

Thinning	48	19
Cleaning	712	288
Brush burning	366	148

Forest Product Sales

Letters of authority and standing permits were issued in 1985 to the many citizens requesting fuelwood. During the calendar year 18,936 cords (68 635 m³ (stacked)) of fuelwood were considered cut off unleased Crown lands and lands leased to the forest industries co-operating with the provincial government.

Timber Licenses

Six timber licenses, granting short-term cutting rights on parcels of Crown land ready to be harvested, were issued to successful tenderers following advertisement.

Sales by Tender (Roadside)

Material produced on Crown land as a result of contracts or work by department crews is usually advertised for sale by tender. The successful bidder is then granted a letter of authority to remove the material. During fiscal 1985/86, 21 parcels of sawlogs, pulpwood, fuelwood, studwood, etc., were sold by letter of authority to the highest bidder.

General Letters of Authority

Authorization was given by letter of authority for the cutting and removal of forest products, aggregate material from beaches and inland deposits, quarried rock and Christmas wreath material, and for other uses of Crown land on a short-term basis, as well as for construction of access roads. A total of 1,726 such letters were newly authorized during the fiscal year.

PRIVATE LAND FOREST MANAGEMENT

INDIVIDUAL ASSISTANCE

The Forest Resource Development Agreement was signed on August 31, 1982, for a five-year period commencing April 1, 1982. The Forest Resource Enhancement on Private Lands Program was implemented and funded by Canada, while the Province employed sufficient staff to

prescribe, oversee and monitor forest-management activities implemented by Canada on private lands. The objectives of this agreement are:

1. to encourage and support forest management for the purpose of endeavoring to increase the sustainable supply of softwoods to an average of 3.3 million m³ annually from the forest resources to help ensure the continued viability and competitiveness of the present wood-based industry, and
2. to improve and increase the utilization of the forest to enhance future forest-industry development opportunities.

The Forest Renewal Agreement was signed on June 11, 1984, for a three-year period commencing April 1984. This agreement was jointly funded by Canada and the Province, while the Province employed sufficient staff, facilities and field equipment to prescribe, oversee the conduct of, and inspect forest-management activities conducted under Program I. Generally, the objective of this agreement is to support the expansion of intensive forest-management renewal in Nova Scotia.

Work assisted under the Forest Resource Development Agreement and the Forest Renewal Agreement as of March 31, 1986, is shown below (Group Ventures are not included):

Year	Mgmt. Plans	Roads		Bridges		Boundaries		Ponds	Silviculture	
		Miles	Km	#		Miles	Km		Acres	Ha
1982/83	115	58	93	2		130	209	18	20,353.0	8 240.0
1983/84	318	92	149	10		346	557	98	24,508.8	9 922.6
1984/85	450	82	131	14		330	528	96	40,937.4	16 573.9
1985/86	449	151	243	14		567	913	115	59,473.7	24 187.7

At the end of the 1985/86 fiscal year, a total of 532 applicants for small private forest-management plans were on file. Department staff and forestry consultants prepared 449 plans during the 1985/86 fiscal year to bring the total number of plans to 3,511, placing 606,351 acres (245 387 ha) under management. These numbers do not include Group Ventures or former individual plans transferred to Group Ventures.

Three pulp and paper companies and eight large landowners were active under the program and are included in the above table and in Tables 19-21. For management-plan assistance details see Appendix, Tables 19-21.

GROUP FOREST MANAGEMENT

During 1985/86 the Group Forest Management Venture Program was expanded and its momentum was maintained and increased from 1984/85. This was achieved by dedicated staff and improved woodlot-owner liaison, and the signing of two new groups with the Province and

Canada. There are now 16 group companies and co-operatives whose objective is to increase the harvest from private lands by encouraging the assembly of small woodlots into larger operating areas, and by providing forest management and marketing to these company/co-operative shareholders within the group's service area.

Groups that commenced operations during 1985/86 were Route 223 Forest Co-operative Limited and Denysdale Wood Producers Co-operative Limited.

As of March 31, 1986, the 16 groups had 1,232 shareholders with 169,341 acres (68 530 ha) of forest lands under management. The average ownership per shareholder, therefore, is 137 acres (55.4 ha). The value of activities by these groups during this year exceeds \$5.5 million. This included income from the Province (operating claims), from Canada (forest-improvement claims), and wood sales of approximately \$2,073,600. This surpasses activities of approximately \$3.4 million during 1984/85 (see Table 22, Appendix).

Operating and Administration

The groups claimed \$1,141,897 for operating, of which \$691,125 and \$450,772 were claimed under the Forest Resource Development Agreement and the Forest Renewal Agreement respectively. Each group, under the direction of a board of directors elected by the shareholders, is responsible for cruising, preparing or revising management plans, co-ordinating these plans into an annual operating plan, implementing the operating plan on the ground, and selling forest products from forest-improvement activities and commercial harvesting. The shareholders paid a management fee of five percent on all wood sales (roadside price), which was credited to each group's operating costs. During 1985/86 this fee totaled \$103,680, up from \$89,839 during 1984/85. This year, 38,437 acres (15 555 ha) of forest lands were brought under Group Management, up from 27,646 acres (11 188 ha). This increase is the result of two new Group Ventures being formed—transferring individual forest-management plans to Group Management and the group foresters being able to concentrate on preparing new plans rather than implementing the plans' recommendations.

Forest Improvement Activities

The groups claimed \$2,368,110 from the Canadian Forestry Service under the Forest Resource Development Agreement for the following work (previous year shown for comparison):

	1985/86		1984/85	
Roads, miles (km)	127	(205)	96	(155)
Bridges, No.	14		7	
Ponds, No.	38		23	
Boundaries, miles (km)	195	(314)	122	(196)
Silviculture, acres (ha)	7,241	(17 893)	3,979	(1 610)

PROTECTION SERVICES

FOREST PROTECTION (FIRE)

General Fire Situation

The 1985 season was a normal fire season: 583 fires burned 2,690 acres (1 077 ha). This compares to a 10-year average of 552 fires and 2,228 acres (928 ha).

Fire occurrence during the spring (March, April and May) was very high; 81 percent of the fires occurred during this period, accounting for 89 percent of the total area burned. (For forest fire statistics, see Tables 23 and 24, Appendix.)

Following a relatively hot and dry spring, the Maritimes experienced one of the most dismal Junes in recent memory, with persistent cloudy, cool and wet weather. Rainfall was excessive in many areas; for example, Halifax had 12.1 inches (307 mm), which broke the previous record of 7.1 inches (181 mm) set in 1977. Timely, heavy rainfalls continued during July and August, maintaining a reduced fire load.

Aircraft

The aircraft utilized in forest-fire management during 1985 were one Cessna 185 Sky Wagon, one Beaver, three Hughes 500Ds, and one Bell 212. All rotary-wing units are equipped with "Bambi Buckets." Aircraft were utilized in the Air Tanker and Hilitanker Mode.

Equipment Development

Three of our 35 4x4 fire trucks have been converted, with a new cab and chassis. This is within the 15-year replacement plan per truck. The surplus cab and chassis units are utilized within the volunteer fire department service.

Foam testing trials were performed with the assistance of the Petawawa National Forest Institute.

Training

Fire training commenced in January 1985 and included fire-simulation exercises and aircraft safety. The courses consisted of classroom and field instruction. Fire behaviour and suppression courses were given to volunteer fire departments. A new video camera and a recorder were purchased to enable production of local training films and aids, and to allow the use of taped material.

Prescribed Burning

Fire is currently utilized as a site-preparation agent; sites are root-raked and the slash is piled and burned. Broadcast burning is not permitted during the fire season (April 1-October 15); however, limited-trial broadcast burning is allowed in the late fall.

Fire Prevention

Fire prevention activities included newspaper ads and television and radio spots, both by Lands and Forests and by industry, and the distribution of printed materials. Lands and Forests' staff members were given the opportunity to present messages through the noon radio farm broadcast, and we took advantage of this with several two-minute messages.

The fire control training officer took the fire prevention message to groups of young people by means of Smokey the Bear material; four Smokey costumes are now regularly lent to groups. Fire prevention is also part of the department's film program in schools.

HUNTER SAFETY EDUCATION

The Hunter Safety Program kept instructors extremely busy, especially during September, October and November. Forty-four additional instructors were trained during the year, and this was certainly helpful in conducting the 368 courses that were put on.

Live firing continued at several ranges as part of the instructional process; 7,235 first-time firearm hunters took the course in 1985, along with 1,974 other firearm hunters and 312 bowhunters, for a total of 9,521 being tested.

See Table 25, Appendix, for a summary of hunting and non-hunting accidents and related statistics.

LAW ENFORCEMENT

Approximately 110 Operations personnel are involved with all aspects of enforcement administering to Parts I, II and III of the Lands and Forests Act; Parks Act and Regulations; Beaches Act; and, to a small extent, the Forest Improvement Act. The RCMP provides assistance in the enforcement of the foregoing acts.

Our staff has enforcement authority under the Snow Vehicles Act, the Migratory Birds Convention Act and the Fisheries Act, with enforcement work being done as time permits.

Part I—Crown Lands

Six persons were charged for theft of products from Crown land in 1985.

Part II—Conservation of Forests

There were 44 charges laid, most for burning without a permit. Considerable effort was put into investigating fire origins in hopes of making the public more fire-prevention conscious.

Part III—Game and Regulations

During the past year, 48 jacking charges and 61 other jacking-related charges were laid as a result of much effort by staff.

Parks Act and Regulations

No serious problems occurred in the provincial parks during 1985. A total of 44 charges were laid for various infractions. Co-operation between the RCMP and our staff remained very good throughout the province.

Beaches Preservation and Protection Act

Many beaches throughout the province are patrolled on a regular basis to prevent (1) theft and (2) damage by recreational vehicles. We see these vehicles as a serious threat to our beaches.

Migratory Bird Convention Act

Much of the enforcement of this Act is conducted by the RCMP. During 1985, 26 charges were laid by our staff.

Snow Vehicles Act

Very little if any enforcement is done with respect to this act unless wildlife is involved.

For a breakdown of charges and offences in all the above categories, see Table 26, Appendix.

TABLE 1
ORCHARD AREAS ESTABLISHED IN NOVA SCOTIA
(Up to March 31, 1986)

Species	Location	Type	Started	Acres (ha)		Managing Agency
				Planted 1985-86	Total Acres (ha)	
Black spruce	East Mines Aldershot	seedling	1982	5.0 (2.0)	12.8 (5.2)	Scott
		seedling	1985	10.9 (4.4)	10.9 (4.4)	Stora
				15.9 (6.4)	23.7 (9.6)	
Highland black spruce	Strathlorne	seedling	1983	--	6.9 (2.3)	Stora
White spruce	Debert	clonal	1984	2.2 (0.9)	3.5 (1.4)	L&F
	East Mines	clonal	1981	2.2 (0.9)	8.2 (3.3)	Scott
	Waterville	clonal	1985	2.2 (0.9)	2.2 (0.9)	Stora
				6.6 (2.7)	13.9 (5.6)	
Ottawa Valley white spruce	MacQuarrie Lake	seedling	1978	--	8.9 (3.6)	Stora
Red spruce	Melvorn Square	clonal	1983	5.9 (2.4)	10.4 (4.2)	Bowater
	Waterville	clonal	1981	3.2 (1.3)	6.7 (2.7)	Stora
	Lawrencetown	clonal	1977	--	4.0 (1.6)	L&F
				9.1 (3.7)	21.1 (8.5)	
Norway spruce	Debert	clonal	1981	1.5 (0.6)	4.5 (1.8)	L&F
White pine	Debert	clonal	1981	0.7 (0.3)	4.0 (1.6)	L&F
TOTALS		clonal		17.9 (7.3)	42.0 (17.5)	
		seedling		15.9 (6.4)	39.5 (15.5)	
GRAND TOTAL				33.8 (13.7)	81.5 (33.0)	

TABLE 2
SPRUCE BUDWORM DEFOLIATION IN NOVA SCOTIA, 1981-85
(thousand ha)

Sector of Province	Year	Light	Moderate	Severe
Cumberland County	1981	40.8	31.8	69.0
Colchester County	1982	13.6	92.0	48.9
	1983	6.4	18.9	158.6
	1984	15.9	23.5	13.7
	1985	25.6	25.5	154.2*
Northumberland Coast	1981	13.5	11.0	1.6
	1982	11.0	28.7	0.8
	1983	21.8	16.5	38.2
	1984	4.2	9.3	12.2
	1985	0.7	6.5	132.6*
Annapolis Valley and Hants County	1981	46.9	42.0	47.3
	1982	0.0	4.1	0.0
	1983	34.7	14.4	29.9
	1984	6.3	0.0	0.0
Cape Breton Island	1981	31.8	71.4	292.9
	1982	12.3	0.4	0.0
	1983	0.5	2.2	15.5
	1984	0.0	0.0	0.0
	1985	0.0	0.0	0.0

*With moderate patches of defoliation included.

**Total area of all
categories of
defoliation**

	1981	1982	1983	1984	1985
(thousand ha)	700	212	358	85	345
(thousand acres)	1,730	524	885	210	853

TABLE 3
RESPONSIBILITY FOR AREAS TREATED IN NOVA SCOTIA
SPRUCE-BUDWORM SPRAY PROGRAM, 1985

Responsibility	Flown (ha)	Area		
		%	No. ¹	%
Large Owners				
Scott Int. Ltd.	9 751.1	19.6	40	17.6
Stora Forest Ind.	2 468.6	5.0	18	7.9
J.D. Irving	2 026.1	4.1	2	0.9
Crown: Operational	7 620.5	15.2	25	11.0
Cone Production	433.2	0.9	7	3.1
Parks	247.0	0.5	4	1.8
Group Ventures				
Athol	9 231.1	18.6	14	6.1
North Nova	6 039.0	12.1	30	13.2
North Colchester	1 950.4	3.9	22	9.7
West Pictou	2 390.8	4.8	21	9.3
Small Owners				
Cobequid Lumber	5 496.0	11.1	21	9.3
Others	2 065.2	4.2	23	10.1
TOTAL	49 720.6	100.0	227	100.0

1. Some areas merged into larger treatment areas.

TABLE 4
AREA TREATED BY COUNTY IN NOVA SCOTIA
SPRUCE-BUDWORM SPRAY PROGRAM, 1985

County	Area	
	Ha	Percent
Mainland		
Antigonish	5 384.9	10.7
Colchester	2 367.0	4.8
Cumberland	37 367.8	75.2
Pictou	4 167.7	8.4
Cape Breton		
Inverness	85.2	0.2
Victoria	348.0	0.7
TOTAL	49 720.6	100.0

TABLE 5
TIMBER PRODUCTS IN NOVA SCOTIA
(Calendar Years 1984 and 1985)

Product	Unit	1984	1985	Increase	Decrease
Lumber, Softwood	Mfbm	185,542	176,652	—	8,890
Lumber, Hardwood	Mfbm	6,240	7,376	1,136	—
Pulpwood	m ³ (stacked)	3 726 392	3 570 135	—	156 257
Pulp Chips,					
Residue	m ³ (stacked)	575 639	315 002	—	260 637
Railway Ties	Mfbm	1,769	1,260	—	509
Mine Packs	Mfbm	2,220	4 427	2,207	—
Pit Props,					
Poles, Piling	m ³ (stacked)	4 710	2 089	—	2 621
Laths	x 10' pieces	7 565	8 103	538	—
Shingles	Squares	604	491	—	113
Staves & Headings	Mfbm	87	56	—	31
Boxwood	Mfbm	2,550	1,765	—	785

TABLE 6
PROVINCIAL CROWN LAND FOREST PRODUCTION, CALENDAR YEAR 1985
(COMMON UNITS OF MEASURE)

County	Sawlogs ¹ Mbdm	Wood, Mbdm	Softwood m ³ -S ² Cords	Hardwood m ³ -S ² Cords	Softwood m ³ -S ² Cords	Hardwood m ³ -S ² Cords	Other Products ³ Softwood m ³ -S ² Cords	Hardwood m ³ -S ² Cords	Whole Tree Chips ⁴ Tonnes	Cords					
Pictou	283	20	130 132	35 903	4 978	1 374	92	25	2 065	564	0	0	0	0	0
Antigonish	0	22	58 765	16 213	3 603	994	70	19	1 953	539	11	3	0	0	0
Guyborough	118	3	171 901	47 427	9 291	2 563	430	119	4 871	1 344	8	2	0	0	0
Chester	2 462	30	28 665	7 909	8 284	2 286	186	51	1 977	546	0	0	0	0	0
Cumberland	1 305	0	7 445	2 054	737	203	786	217	7 157	1 975	0	0	0	0	0
Hants	312	0	656	181	2 940	811	67	19	621	171	297	82	0	0	0
Halifax	6 177	0	103 438	28 538	14 328	3 955	36	10	13 898	3 834	0	0	0	0	0
Annapolis	755	4	2 586	713	549	151	185	51	2 356	650	47	13	0	0	0
Kings	16	0	1 533	423	7 762	2 142	56	15	766	211	0	0	0	0	0
Queens	1 490	40	5 241	1 466	570	157	1	0	797	220	0	0	0	0	0
Lebanon & Dagby	77	29	892	246	0	0	64	18	2 981	823	0	0	0	0	0
Yarmouth	453	63	1 995	551	0	0	81	22	4 677	1 290	668	184	0	0	0
Shelburne	103	43	2 215	611	0	0	3	1	2 909	803	101	28	0	0	0
3,025	0	0	7 162	1 976	52	14	174	48	12 295	3 392	363	100	0	0	0
Inverness	0	37	123 803	34 157	4 964	1 368	76	21	2 534	699	0	0	0	0	0
Victoria	0	0	129 531	35 737	567	157	73	29	992	274	0	0	0	0	0
Cape Breton	0	107	16 626	4 587	1 772	409	76	21	684	189	0	0	0	0	0
Richmond	0	0	0	0	0	0	105	29	457	126	7	2	0	0	0
TOTAL	16,575	398	792 585	218,671	60 371	16,638	2 562	707	63 971	17,649	1 502	414	0	0	0

¹Sawlogs include all products to be sawn.

²m³ (stacked), based on 8-ft. (2.44-m) bolts.

³Products not elsewhere specified converted to m³ solid wood.

⁴Whole tree chips are all species and all DBH.

TABLE 7
PROVINCIAL CROWN LAND FOREST PRODUCTION, CALENDAR YEAR 1985
(CUBIC METRES AND CUBIC FEET OF SOLID WOOD)

County	Sawlogs				Pulpwood			
	Softwood m ³	Softwood Cu.Ft.	Hardwood m ³	Hardwood Cu.Ft.	Softwood m ³	Softwood Cu.Ft.	Hardwood m ³	Hardwood Cu.Ft.
Pictou	1 596	56,362	113	3,991	81 332	2,872,215	3 111	109,864
Antigonish	0	0	125	4,414	36 728	1,297,038	2 252	79,529
Guyborough	667	23,555	19	671	107 438	3,794,141	5 807	205,072
Cotchester	13 909	491,192	167	5,898	17 916	632,698	5 178	182,859
Cumberland	7 372	260,340	0	0	4 653	164,319	461	16,280
Hants	1 761	62,189	0	0	410	14,479	1 837	64,873
Halifax	34 901	1,232,518	0	0	64 649	2,283,060	8 955	316,243
Annapolis	4 267	150,688	24	847	1 616	57,068	343	12,112
Kings	92	3,249	0	0	958	33,831	4 853	171,382
Queens	8 416	297,208	224	7,910	3,276	115,691	356	12,572
Lunenburg	433	15,291	162	5,720	558	19,706	0	0
Digby	2 561	90,441	358	12,643	1 247	44,037	0	0
Yarmouth	584	20,624	246	8,687	1 385	48,911	0	0
Shelburne	17 090	603,528	0	0	4 476	158,069	32	1,130
Inverness	0	0	210	7,416	77 377	2,732,545	3 090	109,122
Victoria	0	0	0	0	80 957	2,858,972	355	12,537
Cape Breton	0	0	603	21,295	10 391	366,955	1 108	39,129
Richmond	0	0	0	0	0	0	0	0
TOTAL	93 650	3,307,222	2 251	79,493	495 366	17,493,702	37 736	1,332,636

TABLE 7 (Continued)
 PROVINCIAL CROWN LAND FOREST PRODUCTION, CALENDAR YEAR 1985
 (CUBIC METRES AND CUBIC FEET OF SOLID WOOD)

County	Fuelwood				Other Products				Total			
	Softwood m ³	Softwood Cu.Ft.	Hardwood m ³	Hardwood Cu.Ft.	Softwood m ³	Softwood Cu.Ft.	Hardwood m ³	Hardwood Cu.Ft.	Softwood m ³	Softwood Cu.Ft.	Hardwood m ³	Hardwood Cu.Ft.
Pictou	52	1,836	1 166	41,177	0	0	0	0	82 981	2,930,449	4 390	155,031
Antigonish	40	1,412	1 113	39,305	7	247	0	0	36 775	1,298,698	3 490	123,248
Guyborough	245	8,652	2 776	98,034	5	177	0	0	108 355	3,826,524	8 602	303,777
Colchester	106	3,743	1 127	39,800	0	0	0	0	31 931	1,127,633	6 472	228,557
Cumberland	448	15,820	4 080	144,084	0	0	0	0	12 473	440,480	4 540	160,329
Hants	38	1,342	354	12,501	181	6,392	0	0	2 390	84,402	2 192	77,410
Halifax	21	741	7 922	279,763	0	0	0	0	99 571	3,516,320	16 877	596,006
Annapolis	105	3,708	1 343	47,427	29	1,024	0	0	6 017	212,488	1 710	60,388
Kings	32	1,130	437	15,432	0	0	0	0	1 082	38,245	5 288	186,744
Queens	1	35	454	16,033	0	0	0	0	11 692	412,899	1 034	36,515
Lunenburg	36	1,271	1 699	60,000	0	0	0	0	1 027	36,268	1 862	65,755
Digby	46	1,624	2 666	94,149	407	14,373	0	0	4 261	150,476	3 024	106,792
Yarmouth	2	70	1 658	58,552	62	2,189	0	0	2 032	71,759	1 904	67,239
Shelburne	99	3,496	7 008	247,485	221	7,804	0	0	21 887	772,933	7 040	248,615
Inverness	43	1,518	1 444	50,994	0	0	0	0	77 420	2,734,064	4 744	167,533
Victoria	42	1,483	565	19,952	0	0	0	0	80 999	2,860,455	920	32,489
Cape Breton	43	1,518	390	13,773	0	0	0	0	10 435	368,509	2 101	74,196
Richmond	60	2,119	261	9,217	4	141	0	0	64	2,260	261	9,217
TOTAL	1 460	51,559	36 464	1,287,715	915	32,313	0	0	591 391	20,884,796	76 450	2,699,809

Conversion Factors: 1 m³fm = 200 cubic feet = 5.663 m³ solid wood equivalent

1 cord, 8-foot bolts = 3.624 56 m³ (stacked) = 2.208 72m³ solid wood

1 m³ (stacked) x 0.609 375 = 1 m³ solid wood

1 m³ = 35.3147 cubic feet

TABLE 8
PROVINCIAL CROWN LAND FOREST PRODUCTION, CALENDAR YEAR 1985
(CUBIC MEASURE SOLID WOOD ROUNDWOOD LEVEL, PER HECTARE AND ACRE)

County	Provincial Crown Land to March 31, 1984		Provincial Crown Production					Production per Unit of Area	
	Acres	Ha	Swd m ³	Swd Cords	Hwd m ³	Hwd Cords	Total m ³	m ³ / ha	Cu.ft./ acre
Pictou	102,239	41,392	82,981	37,570	4,390	1,988	87,371	2.111	30.179
Antigonish	48,682	19,709	36,775	16,650	3,490	1,580	40,265	2.043	29.209
Guysborough	498,915	201,990	108,355	49,055	8,602	3,894	116,957	0.579	8.279
Colchester	125,683	50,884	31,931	14,457	6,472	2,930	38,403	0.755	10.790
Cumberland	152,675	61,812	12,473	5,647	4,540	2,056	17,013	0.275	3.935
Hants	93,161	37,717	2,390	1,082	2,192	992	4,581	0.121	1.737
Halifax	460,508	186,440	99,571	45,081	16,877	7,641	116,447	0.625	8.930
Annapolis	110,090	44,571	6,017	2,724	1,710	774	7,726	0.173	2.478
Kings	78,588	31,817	1,082	490	5,288	2,394	6,370	0.200	2.863
Queens	143,090	57,931	11,692	5,294	1,034	468	12,727	0.220	3.141
Lunenburg	91,543	37,062	1,027	465	1,862	843	2,889	0.078	1.114
Digby	184,560	74,721	4,261	1,929	3,024	1,369	7,285	0.098	1.394
Yarmouth	269,145	108,966	2,032	920	1,904	862	3,936	0.036	0.516
Shelburne	257,948	104,432	21,887	9,909	7,040	3,188	28,927	0.277	3.960
Inverness	302,789	122,587	77,420	35,052	4,744	2,148	82,165	0.670	9.583
Victoria	336,564	136,261	80,999	36,672	920	416	81,918	0.601	8.595
Cape Breton	119,146	48,237	10,435	4,724	2,101	951	12,535	0.260	3.715
Richmond	96,852	39,211	64	29	261	118	325	0.008	0.118
TOTAL	3,472,178	1,405,740	591,391	267,753	76,450	34,613	667,841	0.475	6.792

TABLE 9
FISH AND GAME LICENSE SALES BY COUNTY, 1985-86

County	Resident Big Game	Non-resident Big Game	Resident Second Deer	Non-resident Second Deer	Resident Small Game	Non-resident Small Game	Resident Senior Citizen
Annapolis	2,448	42	68	0	789	5	474
Antigonish	1,963	72	420	3	633	4	248
Cotchester	5,520	229	1,611	19	1,648	37	750
Cumberland	5,561	276	1,558	10	1,722	31	889
Digby	3,162	56	81	0	1,052	7	535
Guysborough	2,257	77	1,062	4	844	4	332
Halifax	19,653	109	3,659	2	7,084	28	1,578
Hants	4,700	22	1,468	2	1,255	1	564
Kings	4,628	27	470	0	1,699	16	623
Lunenburg	6,126	30	312	0	1,904	2	861
Pictou	5,921	147	1,731	5	1,484	2	685
Queens	1,927	72	270	0	842	15	370
Shelburne	3,513	31	50	0	1,629	3	583
Yarmouth	4,117	69	147	0	1,634	21	621
Cape Breton	8,700	56	2,056	7	3,490	7	808
Inverness	2,998	168	994	37	1,250	14	306
Richmond	1,503	59	595	9	720	2	226
Victoria	896	40	341	8	507	3	110
TOTALS	85,593	1,583	16,893	106	30,186	202	10,563

TABLE 9 (Continued)
FISH AND GAME LICENSE SALES BY COUNTY, 1985-86

County	Resident Fishing Licenses	Non-resident Fishing Licenses	Resident Salmon	Replacement Salmon	Reduced Resident Salmon	Non-resident Salmon	Furbearer
Annapolis	2,281	71	64	0	1	4	255
Antigonish	1,755	63	91	0	2	19	162
Colchester	5,129	164	339	0	32	98	328
Cumberland	4,216	188	185	0	7	24	499
Digby	1,531	51	17	0	0	0	206
Guysborough	1,889	188	315	0	14	84	248
Halifax	19,488	292	1,556	6	77	77	452
Hants	4,223	36	160	1	4	22	239
Kings	4,523	62	125	0	3	3	270
Lunenburg	5,079	70	574	3	37	28	269
Pictou	6,344	107	202	1	16	15	364
Queens	1,580	125	290	0	8	86	190
Shelburne	1,034	33	25	0	0	0	152
Yarmouth	2,034	109	103	0	5	15	219
Cape Breton	10,148	113	621	1	25	8	145
Inverness	2,838	468	261	2	11	281	161
Richmond	1,032	47	80	0	3	12	120
Victoria	692	102	42	0	4	12	70
TOTALS	75,806	2,289	5,050	14	249	788	4,349

TABLE 10
NOVA SCOTIA WILD FUR EXPORTS, VALUE TO TRAPPER, 1983-84, 1984-85, 1985-86

Species	1983-84			1984-85			1985-86		
	Number Exported	Average Price	Total Value	Number Exported	Average Price	Total Value	Number Exported	Average Price	Total Value
Beaver	2,141	\$ 19.80	\$ 42,392	3,281	\$ 31.40	\$103,023	4,086	\$ 35.82	\$146,361
Muskrat	41,162	4.90	201,694	43,466	4.15	180,384	36,934	3.92	144,781
Otter	426	57.01	24,286	543	56.98	30,940	519	46.93	24,357
Mink	3,172	18.40	58,365	3,404	24.11	82,070	2,789	25.59	71,371
Lynx	5	239.50	1,198	6	429.62	2,578	8	472.81	3,782
Bobcat	1,041	102.99	107,213	1,091	149.03	162,592	1,135	118.80	134,838
Fox	2,003	60.36	120,901	2,435	52.82	128,617	2,626	35.90	94,273
Raccoon	6,042	15.85	95,766	7,797	20.60	160,618	8,231	22.35	183,963
Weasel	962	1.44	1,385	1,105	1.33	1,470	889	1.35	1,200
Squirrel	7,292	.37	2,698	9,661	.43	4,154	5,377	.42	2,258
Skunk	10	2.98	30	12	1.46	18	17	2.57	44
Fisher	48	60.72	2,915	31	116.05	3,598	37	126.49	4,680
Black Bear	28	20.19	565	83	37.93	3,148	82	24.74	2,029
Coyote	157	28.76	4,515	130	34.14	4,438	230	33.30	7,659
TOTALS			\$663,923			\$867,648			\$821,596

TABLE 11
NOVA SCOTIA WILD FUR EXPORT* STATISTICS, 1932-33 TO 1985-86

Year	Beaver*	Otter	Mink	Raccoon	Bobcat	Lynx	Fox	Weasel	Skunk	Squirrel	Bear*
1932-33		53	13,161	996	794	16	1,926	8,205	793	107	10
1933-34		78	17,341	1,423	775	18	1,815	6,135	262	548	7
1934-35		86	38,114	1,224	703	2	1,838	6,469	471	420	8
1935-36		107	34,019	1,027	589	8	1,714	9,790	349	10,115	3
1936-37		79	48,135	1,827	815	5	2,063	15,448	451	25,949	17
1937-38		105	51,349	1,678	452	15	1,291	9,472	317	12,441	10
1938-39		141	56,898	1,145	498	30	1,229	7,541	168	46,369	2
1939-40		77	48,860	1,315	488	62	1,154	7,729	97	9,361	3
1940-41		95	49,505	1,026	553	101	1,316	3,308	-	12,907	-
1941-42		162	54,694	1,555	1,119	130	2,665	6,476	271	9,762	132
1942-43		150	49,951	1,802	862	62	2,574	4,291	90	23,010	132
1943-44	2,789	186	47,733	1,803	1,193	44	3,659	9,464	143	17,577	161
1944-45	no season	169	42,237	1,985	1,011	39	3,408	8,468	120	26,343	278
1945-46	7,320	255	49,653	2,298	812	11	3,589	9,710	107	95,052	386
1946-47	no season	264	58,269	1,719	554	18	2,249	7,632	67	69,594	373
1947-48	no season	245	50,600	1,896	389	27	1,232	7,658	39	51,375	409
1948-49	9,570	287	52,052	1,210	330	34	957	5,852	27	147,970	348
1949-50	no season	260	39,046	1,264	315	17	826	6,527	26	24,516	318
1950-51	no season	174	35,169	2,194	-	70	1,964	6,922	118	290,228	248
1951-52	7,633	210	41,988	2,129	336	23	1,632	7,023	13	43,531	219
1952-53	2,479	208	55,214	2,082	263	5	904	5,864	11	109,482	195
1953-54	3,075	174	57,185	1,852	248	10	553	5,509	8	82,743	169
1954-55	4,445	212	40,441	1,253	178	20	443	3,771	3	41,757	156
1955-56	3,113	232	40,756	1,354	332	51	405	2,245	1	6,706	172

TABLE 11 (continued)

Year	Beaver*	Otter	Muskrat	Wild Mink	Raccoon	Bobcat	Lynx	Fox	Weasel	Skunk	Squirrel	Bear*	Fisher	Coyote**
1956-57	5,437	281	36,308	2,867	1,317	142	17	318	3,671	41	13,620	226		
1957-58	3,002	258	26,459	2,066	1,266	261	32	657	1,898	364	3,468	164		
1958-59	5,323	280	16,706	1,730	527	214	28	269	579	1	1,202	239		
1959-60	2,791	185	11,906	1,047	624	151	1	322	395	2	760	236		
1960-61	7,541	486	33,899	1,996	1,769	555	18	879	2,132	27	3,792	174		
1961-62	3,958	409	17,437	1,864	1,028	377	70	906	986	5	3,709	139		
1962-63	2,744	360	12,339	1,710	1,672	738	79	1,273	1,172	16	5,787	155		
1963-64	2,998	320	21,243	1,990	1,585	657	24	1,109	731	14	1,101	162		
1964-65	5,245	404	24,027	1,777	1,386	617	28	2,733	1,010	235	9,522	161		
1965-66	2,883	591	22,677	2,312	2,276	1,334	97	2,692	2,988	27	2,928	256		
1966-67	4,603	548	20,471	2,256	1,375	1,789	70	2,183	3,445	48	11,941	205		
1967-68	2,488	519	17,565	1,536	1,337	1,567	163	1,492	1,161	8	1,758	163		
1968-69	4,680	492	19,220	1,643	2,706	1,627	87	1,958	1,242	10	1,587	108		
1969-70	3,508	564	29,590	1,908	3,382	1,729	218	2,797	804	34	1,035	218		
1970-71	3,766	457	22,484	1,085	1,746	1,659	37	865	805	8	1,623	210		
1971-72	3,318	665	24,362	1,882	3,659	1,963	47	2,327	215	6	303	175		
1972-73	3,180	610	16,883	1,626	5,346	1,856	30	1,496	403	0	1,132	305		
1973-74	3,757	595	38,117	1,777	6,642	1,320	24	1,924	753	6	2,583	113		
1974-75	2,494	533	37,751	2,294	5,137	1,947	15	1,513	1,096	2	6,121	168		
1975-76	409	202	29,309	2,351	4,715	1,862	0	1,997	1,073	91	2,397	249		
1976-77	2,761	721	28,416	2,339	7,121	2,319	0	2,174	675	6	6,278	257	64	1
1977-78	3,075	594	50,406	3,428	7,355	2,423	39	2,397	548	43	2,670	271	34	1
1978-79	2,186	596	39,781	3,107	9,576	3,245	73	3,343	1,268	142	3,529	495	43	2
1979-80	4,130	672	35,946	3,860	10,946	3,170	45	2,908	1,071	76	4,385	831	48	6

TABLE 11 (continued)

Year	Beaver*	Otter	Muskrat	Wild Mink	Raccoon	Bobcat	Lynx	Fox	Weasel	Skunk	Squirrel	Bear*	Fisher	Coyote**
1980-81	4,071	592	47,892	3,974	10,181	1,687	0	1,793	1,233	65	3,314	863	31	25
1981-82	3,761	571	51,941	4,362	12,362	1,722	0	2,346	1,148	23	1,843	546	45	39
1982-83	2,663	450	42,929	3,622	8,511	1,164	3	2,320	1,215	19	8,554	435	25	72
1983-84	2,240	426	41,162	3,172	6,042	1,041	5	2,003	962	10	7,292	422	48	157
1984-85	3,281	543	43,466	3,404	7,797	1,091	6	2,435	1,105	12	9,661	882	31	279
1985-86	4,086	519	36,934	2,789	8,231	1,135	8	2,626	889	17	5,377	595	37	396

*Figures for beaver and bear are not export statistics. Figures for beaver represent the actual harvest tally (1982-83 and before only). Figures for bear are those of bear bountied up to and including 1964, and after 1964 are calculated bear kill from hunter and trapper reports.

**Coyote figures are from carcass collection sheets or bounty records.

TABLE 12
NUMBER OF SMALL-GAME HUNTERS, 1980-81 TO 1985-86

	1980- 1981	1981- 1982	1982- 1983	1983- 1984	1984- 1985	1985- 1986
Rabbits	23,928	26,061	28,463	27,959	30,531	24,394
Grouse	21,701	21,529	22,328	22,237	23,513	27,211
Wild Pheasants	5,742	5,430	5,028	6,593	6,876	7,540
Preserve Pheasants	612	517	632	591	155	459
Total Pheasants	6,354	5,947	5,660	7,184	8,031	7,999
Hungarian Partridge	883	702	878	722	722*	651
Woodcock	2,107	1,515	1,829	1,806	2,289	1,646
Snipe	1,767	1,256	1,126	1,739	2,018	1,301
TOTAL UPLAND GAME	28,801	29,843	29,781	29,618	36,278	35,057
Black Ducks	10,027	9,863	10,486	11,654	13,493	7,318
Sea Ducks	4,358	4,352	4,435	4,789	5,625	3,789
Other Ducks	6,153	5,895	6,722	8,041	8,596	4,152
Geese	5,036	4,631	4,338	5,871	5,834	3,633
TOTAL WATERFOWL	11,961	11,516	11,965	12,873	14,739	8,097

*When "Huns" was changed to "Hungarian Partridge" on the survey card, hunters reported killing 35,269 whereas previously, under "Huns," it had been about 1,500 each year. Therefore, "Grouse" figures may be a low estimate, and the figure used for "Huns" was assumed to be about the same as last year.

TABLE 13
SMALL GAME HARVEST, 1980-81 TO 1985-86

	1980- 1981	1981- 1982	1982- 1983	1983- 1984	1984- 1985	1985- 1986
Rabbits	323,336	379,862	547,566	508,124	421,388	449,426
Grouse	76,274	65,514	83,331	85,935	97,427	132,421
Wild Pheasants	13,278	10,822	10,126	14,171	16,335	12,668
Preserve Pheasants	2,446	1,773	3,973	1,805	1,048	1,378
Total Pheasants	15,724	12,595	14,099	15,976	17,383	14,046
Hungarian Partridge	2,004	1,071	1,548	1,083	1,083*	1,340
Woodcock	5,537	3,360	3,094	2,952	4,035	6,736
Snipe	6,351	3,316	2,673	3,773	5,199	4,286
TOTAL UPLAND GAME	429,226	464,618	652,311	617,843	546,515	608,255
Black Ducks	60,454	41,711	47,327	71,911	75,753	46,089
Sea Ducks	28,533	20,608	33,314	57,456	34,388	48,840
Other Ducks	34,732	18,403	34,506	52,763	64,502	35,449
Geese	8,524	3,693	5,051	9,712	12,554	5,761
TOTAL WATERFOWL	132,243	84,415	120,198	191,842	187,197	136,139

*When "Huns" was changed to "Hungarian Partridge" on the survey card, hunters reported killing 35,269 whereas previously, under "Huns," it had been about 1,500 each year. Therefore, "Grouse" figures may be a low estimate, and the figure used for "Huns" was assumed to be about the same as last year.

TABLE 14
AVERAGE HARVEST PER HUNTER, 1980-81 TO 1985-86

	1980- 1981	1981- 1982	1982- 1983	1983- 1984	1984- 1985	1985- 1986
Rabbits	13.5	14.6	19.2	18.2	13.8	18.4
Grouse	3.5	3.0	3.7	3.9	4.1	4.8
Wild Pheasants	2.3	3.0	2.0	2.2	2.1	1.7
Preserve Pheasants	4.0	3.4	6.3	3.0	6.8	3.0
Total Pheasants	2.5	2.1	2.5	2.2	2.2	1.8
Hungarian Partridge	2.3	1.5	1.8	1.5	1.5*	2.1
Woodcock	2.6	2.2	1.7	1.6	1.8	4.1
Snipe	3.6	1.8	2.4	2.2	2.6	3.3
TOTAL UPLAND GAME	14.9	15.6	21.9	20.9	15.1	17.4
Black Ducks	6.0	4.2	4.5	6.2	5.6	6.3
Sea Ducks	6.5	4.7	7.5	12.0	6.1	12.9
Other Ducks	5.6	3.1	5.1	6.6	7.5	8.5
Geese	1.7	0.8	1.2	1.6	2.2	1.6
TOTAL WATERFOWL	11.0	7.3	10.0	14.9	12.7	16.8

*When "Huns" was changed to "Hungarian Partridge" on the survey card, hunters reported killing 35,269 whereas previously, under "Huns" it had been about 1,500 each year. Therefore, "Grouse" figures may be a low estimate, and the figure used for "Huns" was assumed to be about the same as last year.

TABLE 15
KELLY LAKE FISH CULTURE STATION STOCKING LIST, 1985
Yearling Speckled Trout

Halifax County

Albro Lake	2,000
Bear Lake	200
Cruikshanks Lake	1,148
Lake Echo	4,000
First Lake	3,600
Kelly Lake	4,022
Kindervator Lake	200
Maynard Lake	2,000
Mill Lake	200
Oathill Lake	2,000
Otter Lake	3,000
Penhorn Lake	2,000
Round Lake	200
Second Lake	3,600

Hants County

Meadow Pond	1,000
TOTAL YEARLING SPECKLED TROUT	29,170

Yearling Rainbow Trout**Cape Breton County**

Lewis Lake	3,000
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Halifax County

Kelly Lake	3,037
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Porters Lake	15,000
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Round Lake	2,900
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Inverness County

Bras d'Or Lake (Blues Mills)	3,000
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Bras d'Or Lake (Littel Narrows)	3,000
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Kings County

Sunken Lake	3,500
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Victoria County

Bras d'Or Lake (Big Harbour)	3,000
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Bras d'Or Lake (South Cove)	3,000
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Bras d'Or Lake (Lower Washabuck)	2,766
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TOTAL YEARLING RAINBOW TROUT	42,203
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GRAND TOTAL	71,373
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TABLE 16
LANDS RECONVEYED TO THE CROWN, BY ACREAGE, 1985-86

(39 reconveyances)

County	Acres	Ha
Annapolis	50	20
Antigonish	0	0
Cape Breton	1,413	572
Colchester	640	259
Cumberland	6	2
Digby	0	0
Guysborough	1	1
Halifax	418	169
Hants	5	2
Inverness	672	272
Kings	0	0
Lunenburg	0	0
Pictou	3,218	1 302
Queens	307	124
Richmond	43	18
Shelburne	301	122
Victoria	0	0
Yarmouth	20	8
TOTAL	7,094	2 871

TABLE 17
LANDS RECONVEYED TO THE CROWN, BY PURPOSE, 1985-86

Purpose	Acres	Ha
Timber Reserve	5,017	2 030
Recreation and Park Reserve	591	239
Right of Way	5	2
Building	6	2
Environment	54	22
Historic Site	1	1
Mining Area	1,413	572
Nursery	1	1
Road Construction	6	2
TOTAL	7,094	2 871
Expropriation	6,927	2 803
Transfer of Administration and Control	55	22

TABLE 18
LOCATION OF CROWN LAND

(as of March 31, 1986)

County	Acres	Ha
Annapolis	110,126	44 566
Antigonish	48,681	19 701
Cape Breton	121,141	49 024
Colchester	126,322	51 121
Cumberland	153,171	61 986
Digby	184,676	74 736
Guysborough	498,962	201 923
Halifax	460,940	186 536
Hants	93,174	37 706
Inverness	303,116	122 667
Kings	78,588	31 803
Lunenburg	91,543	37 046
Pictou	105,641	42 751
Queens	143,367	58 019
Richmond	96,895	39 212
Shelburne	259,138	104 870
Victoria	336,564	136 203
Yarmouth	269,737	109 159
TOTAL	3,481,782	1 409 029

TABLE 19
NUMBER OF FOREST MANAGEMENT PLANS FOR
SMALL, INDIVIDUAL WOODLOTS, BY SUBDIVISION, 1985-86

Subdivision	Applications on File	Completed and Signed*	Completed and Signed Acres	Ha
Cape Breton North	60	50	7,413	3 000
Cape Breton South	126	55	9,156	3 706
Eastern	168	126	19,274	7 800
North Central	54	79	9,795	3 964
South Central	62	27	61,910	25 055
Valley	27	35	5,056	2 046
South Shore	26	49	8,098	3 277
Western	9	28	4 025	1 629
TOTAL	532	449	124,727	50 477

*Many former individual plan holders have transferred to Group Ventures.

TABLE 20
FOREST MANAGEMENT ACTIVITIES ON PRIVATE LAND (INDIVIDUALS), 1965-86
 (Forest Resource Development Agreement)

Category	50-5,000 Acres			Over 5,000 Acres			Pulp and Paper Co.			Total
	Unit	Assistance*		Unit	Assistance*		Unit	Assistance*		
Management Plans	449	\$ 520,349.37			\$851.96		N/A	N/A		\$ 521,201.33
Access Roads (built & under construction)	120.8 miles (194.5 km)	370,658.00		N/A	N/A		N/A	N/A	120.8 miles (194.5 km)	370,658.00
Bridges	140.0 feet (42.7 m)	17,093.27		N/A	N/A		N/A	N/A	140.0 feet (42.7 m)	17,093.27
Boundaries	369.7 miles (595.0 km)	167,380.12		N/A	N/A		N/A	N/A	369.7 miles (595.0 km)	167,380.12
Fire Ponds	77	17,063.00		N/A	N/A		N/A	N/A	77	17,063.00
Silviculture	14,876.2 acres (6 020.3 ha)	2,281,605.25		1,953.1 acres (790.4 ha)	322,129.17		30,698.1 acres (12 423.5 ha)	\$931,488.76	47,527.7 acres (19 234.2 ha)	3,535,223.18
TOTAL		\$3,374,149.01			\$322,981.13			\$931,488.76		\$4,628,618.90

* Assistance paid by Canada as recommended by the Province. Group ventures not included.

TABLE 21
FOREST MANAGEMENT ACTIVITIES ON PRIVATE LAND (INDIVIDUALS), 1985-86
 (Forest Renewal Agreement)

Category	Over 5,000 Acres		50-5,000 Acres		Total	
	Unit	Assistance	Unit	Assistance	Unit	Assistance
Access Roads (built and under construction)	10.6 km (17.0 km)	\$ 36,300	N/A	N/A	10.6 miles (17.0 km)	\$ 36,300
Trails (built and under construction)	14.9 miles (24.0 km)	11,100	N/A	N/A	14.9 miles (24.0 km)	11,100
Bridges	36.1 feet (11.0 m)	5,500	N/A	N/A	36.1 feet (11.0 m)	5,500
Boundaries	13.7 miles (22.0 km)	4,800	N/A	N/A	13.7 miles (22.0 km)	4,800
Silviculture	11,658.4 acres (4 720.0 ha)	1,648,500	557.7 acres (225.7 ha)	\$38,600	12,216.0 acres (4 945.7 ha)	1,687,100
TOTAL		\$1,706,200		\$38,600		\$1,744,800

TABLE 22
GROUP FOREST MANAGEMENT ON PRIVATE LAND, 1985-86

Group	Year	Operating Chained	Re- bids	Mgmt. Plans	Area Under Mgmt. Acres	Ha	Bound Construction Miles	Km	Perch	Miles	Km	Shoreline Acres	Ha	Forest Improvement Chained	Volume of Wood Sold m ³ (stacked)	Mgmt. Per Contribution Cords	Operating
Wine Picou		\$ 85,228	139	161	16,664	6 752	10.1	16.3	3	5.7	9.2	665.0	269.1	\$ 158,194	6,715	24 340	\$ 14,977
North Nova		84,053	103	101	26,790	10 842	10.3	16.6	3	6.1	9.8	312.7	126.5	119,992	3,496	12 656	5,663
Baldock		87,995	144	110	16,700	6 758	19.4	31.2	-	1.9	3.1	584.4	236.5	222,250	4 355	15 765	7,289
La Foret		82,232	105	124	7,450	3 015	2.4	3.9	-	34.4	55.4	223.7	90.5	87,704	1,940	7 019	4,196
North Mountain		74,154	76	90	8,508	3 443	5.3	8.5	4	12.5	20.1	336.0	136.0	132,682	2,750	9 969	6,540
Starbo		78,154	98	116	15,180	6 147	9.8	15.8	1	16.7	26.9	564.6	228.5	210,434	3,767	13 654	8,234
Conform		70,255	101	125	22,100	8 944	11.5	20.1	3	12.7	20.4	994.0	402.3	311,046	8,976	32 493	18,450
Alford		79,876	71	75	18,379	7 438	10.0	16.1	7	18.0	29.0	1,344.9	544.3	322,141	4,170	15 105	9,730
Deysdale		26,178	25	15	2,496	1 010	-	-	-	-	-	-	-	-	-	-	-
Route 223		25,000	33	11	1,397	565	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL		691,125 *	895	928	135,664	54 914	78.8	128.5	21	108.0	173.9	5,025.3	2 033.7	1,595,943 *	37,392	135 435	77,903
Council		72,477	61	37	5,181	2 097	4.4	7.1	-	18.3	29.5	94.0	38.0	84,914	2,599	8 696	5,017
Lumberburg		72,258	53	58	6,749	2 731	8.6	13.8	3	7.0	11.3	105.3	42.6	93,398	1,178	4 270	2,340
East Greyborough		67,940	26	28	4,002	1 620	5.8	9.3	6	9.8	15.8	397.0	160.7	105,001	2,370	8 589	4,782
Forchu		75,342	59	51	6,737	2 726	3.7	6.0	6	13.6	21.9	306.2	123.9	107,066	19,089	69 117	3,700
North Colchester		76,395	69	40	5,706	2 309	15.9	25.6	2	17.2	27.7	468.5	189.6	154,785	3,711	13 452	7,422
North Inverness		86,160	71	46	5,272	2 134	10.5	16.9	-	21.1	34.0	746.2	302.0	221,099	1,390	4 674	2,514
SUBTOTAL		450,772 **	337	260	33,647	13 617	48.9	78.7	17	87.0	140.2	2,216.2	896.8	772,167 *	30,006	108 798	25,777
TOTAL																	
ALL GROUPS		\$1,141,897	1,232	1,188	169,341	68 531	127.7	207.2	38	195.0	314.1	7,241.5	2 930.5	\$2,368,110	67,398	244 233	\$103,680

*Forest Resource Development Agreement

**Forest Renewal Agreement

. . . . *

TABLE 23
FOREST FIRES BY CAUSE AND EXTENT, 1985

Cause	# of Fires	Percentage of Total Fires	Area		Percentage of Total Area
			Acres	Ha	
Smoking	105	18.0	449.5	181.9	16.9
Camp Fire	9	1.5	19.5	7.9	0.7
Incendiary	151	25.9	1,270.9	514.3	47.8
Chimney	0	0	0	0	0
Explosives	0	0	0	0	0
Power Saw	3	0.5	3.0	1.2	0.1
Slash (Permit)	41	7.0	281.5	113.9	10.6
Slash (No Permit)	28	4.8	23.7	9.6	0.9
Land Clearing	16	2.7	112.4	45.5	4.2
Burning Debris	78	13.4	122.6	49.6	4.6
Burn Rt.-of-way	8	1.4	22.0	8.9	0.8
Locomotive Sprk.	14	2.4	15.1	6.1	0.6
Other Eng. Sprk.	4	0.7	4.0	1.6	0.2
Miscellaneous	43	7.4	88.7	35.9	3.3
Unknown	82	14.1	247.8	100.3	9.3
Lightning	1	0.2	1.0	0.4	0.0
TOTAL	583	100	2,661.4	1 077.0	100.0

TABLE 24
NUMBER AND AREA OF FOREST FIRES
BY MONTH OF OCCURRENCE, 1985

Month	No. of Fires	Area		Percentage of Total Fires	Percentage of Total Area
		Acres	Ha		
January	0	0	0	0	0
February	0	0	0	0	0
March	47	706.0	285.7	8.0	26.5
April	315	1,258.8	509.4	54.0	47.3
May	113	441.6	178.7	19.4	16.6
June	12	9.1	3.7	2.1	0.4
July	25	15.8	6.4	4.3	0.6
August	26	17.1	6.9	4.5	0.6
September	24	82.8	33.5	4.1	3.1
October	17	47.7	19.3	2.4	1.8
November	7	82.5	33.4	1.2	3.1
December	0	0	0	0	0
TOTAL	583	2,661.4	1 077.0	100	100

TABLE 25
HUNTING AND NON-HUNTING ACCIDENTS
AND RELATED STATISTICS 1985

County	Hunting Accident Injury	Non- Hunting Accident	Fatal	Total By County
Annapolis	-	-	-	-
Antigonish	-	-	-	-
Cape Breton	1	-	-	1
Cumberland	-	1	-	1
Colchester	1	-	-	1
Digby	-	-	-	-
Guysborough	-	-	-	-
Halifax	-	-	-	-
Hants	1	-	1	2
Inverness	-	-	-	-
Kings	-	-	-	-
Lunenburg	1	1	-	2
Pictou	-	-	-	-
Queens	-	-	1	1
Richmond	-	-	-	-
Shelburne	1	-	-	1
Victoria	-	-	-	-
Yarmouth	1	-	-	1
TOTAL	6	2	2	10

Game Being Hunted				Type of Weapon Involved		
Moose	-	Furbearers	-	Shotgun	2	Muzzle loader -
Deer	4	Bear	-	Rifle	5	Bow -
Rabbits	3	Unknown	-	22 Cal.	3	
Birds	1	Non-hunting	2			

Causes of Accidents

Shooter stumbled and fell	4	Victim moved in line of fire	-
Victim mistaken for game	2	Weapon fell from insecure place	1
Trigger caught on object	-	Victim covered by shooter swinging on game	-
Unintentional discharge	4	Crossing fence or obstacle with loaded weapon	1
Horseplay with firearm	-	Removing weapon or placing in vehicle	-
Clubbing cover of game	-	Riding in vehicle with loaded firearm	1
Intentional discharge	-		
Unloading weapon	-		
Defective weapon	-		
Loading weapon	-		
Victim out of sight	1		

Colour of Clothing Worn by Victim

White	1	Blue	-	Yellow	-
Red	-	Dark	-	Orange (fatal)	2
Green	-	Other	3	Orange (injury)	4

Time of Day

6:30-8:00 a.m.	1	12:00-4:00 p.m.	2
8:00-10:00 a.m.	1	4:00-5:00 p.m.	3
10:00-12:00 noon	-	5:00 p.m.-dusk	3

Cover Type

Dense	3
Light	1
Open	6
Unknown	-

Visibility

Clear	5
Poor	1
Overcast	2
Dark	2
Unknown	-

Vision

Wears glasses	1
Colour blind	-
Unknown	-

**Accidental
Self-inflicted**

Fatal	1
Injury	6
TOTAL	7

Age Class of Accidents

	<i>Shooter</i>	<i>Victim</i>
Unknown	-	-
10-15	-	-
16-20	1	1
21-25	3	-
26-30	2	1
31-35	1	-
36-40	1	-
41-45	1	-
46-50	1	-
50+	-	1

**Charges Laid as
Results of Accidents****Muzzle to Wound
Distance (yards)**

Lands & Forests Act	-	0-10	7
Criminal Code	1	11-50	3
No. liquor involved	-	51-100	-
		Over 100	-
		Unknown	-

Hunting Experience of Shooter

1 Year	-	4 Years	3	Over 10	4
2 Years	-	5 Years	-	Unknown	1
3 Years	-	Over 5	2		

Hunter Safety Courses

First-time firearm hunters	7,235
Other firearm hunters	1,974
Bowhunters	312
TOTAL	9,521
Failures: Firearm	632
Bowhunter	-
TOTAL	632

Course Graduates Involved in Accidents

Firearm course	5
Bowhunter course	0
TOTAL	<u>5</u>

Number of Hunters and Fishermen, 1984**

Big game	85,635	Est. rabbit	
Small game	31,567	hunters	30,531
Moose	-	Bear trapping	1,001
Fishing	81,565	Furbearers	4,099
Senior citizen big		Senior citizen	
and small game	10,092	fishing	5,050
Salmon licenses	5,790	TOTAL	<u>255,330</u>

Prosecutions, 1984**

Total prosecutions	627
Jacking, uncased gun and	
shining light prosecutions	133
Warnings	676

**Licenses and prosecutions are for previous year, as present year's statistics are not available.

**OTHER STATISTICS RELATED TO GAME:
SEASONS & LICENSE FEES, 1985**

- Deer:** October 25 to December 7, all counties
Bag limit: one of either sex (two east of Hwy. 101)
License fees: Resident—\$15.00; Non-resident—\$75.00
Resident senior citizen—Free
- Bear:** Trapping: September 15 to December 15
(Residents only—License free)
Hunting: October 25 to December 7 (License fees: resident—\$15.00; Non-resident—\$75.00)
- Rabbits:** November 16 to February 15 (Use of 22 cal. weapon from December 7 only)
Bag limit: None
No license required for residents.
Small-game license for non-resident—\$35.00.
- Moose:** No moose season in 1985.
- Pheasant, Hungarian Partridge, and Grouse:**
Pheasant and Hungarian partridge in Annapolis, Kings, Hants and Lunenburg—November 1 to December 15.
Remainder of province—October 1 to December 15.
Grouse, October 1 to December 15.
Bag limits: Pheasants—2 cocks per day, after first day no more than 4 cock birds. Hungarian partridge and grouse—5 per day, no more than 10 after first day.
License fees: Resident—\$10.00; Non-resident—\$35.00;
Resident senior citizen—free.
- Furbearers:** Mink, muskrat, otter, beaver: November 1 to January 15, 1986. Fox, bobcat, weasel, red squirrel, skunk, fisher, raccoons: November 1 to last day of February 1986. Residents only.
License fee: \$10.00. No snaring until December 15. See Trappers Summary for bag limits.

Fish and Migratory Birds.

Regulations and bag limits controlled by federal government. Provincial Salmon License: Resident—\$10.00; Non-resident—\$15.00.

Fishing License: Resident—\$4.00; Non-resident—\$15.00.

Federal Migratory Bird License: \$3.50. Provincial Small Game License also required.

TABLE 26
OFFENCES AND CONVICTIONS
BY STATUTE AND COUNTY, 1985

A—Offences known or reported;

B—Number of persons charged;

C—Warnings issued

District		L&F Act Part I	L&F Act Part II	L&F Act Part III	Parks Act	Bowling P & P Act	Snow Vehicles Act	MBC Act	Total
Annapolis	A	-	4	120	-	-	-	-	124
	B	-	2	17	-	-	-	-	19
	C	-	1	7	-	-	-	-	8
Antigonish	A	2	-	61	-	3	-	8	74
	B	-	-	11	-	-	-	2	13
	C	-	-	10	-	-	-	-	10
C.B./Sydney	A	10	19	818	13	2	-	77	939
	B	-	2	37	8	-	-	2	49
	C	1	5	50	-	-	-	-	56
Colchester	A	-	3	167	-	-	-	5	175
	B	-	1	41	-	-	-	1	43
	C	-	-	13	-	-	-	-	13
Cumberland East	A	-	-	103	-	-	-	-	103
	B	-	-	18	-	-	-	-	18
	C	-	-	6	-	-	-	-	6
Cumberland West	A	-	5	43	9	4	-	-	61
	B	-	-	3	4	-	-	-	7
	C	-	-	1	-	-	-	-	1
Digby	A	-	14	150	5	4	-	-	173
	B	-	-	14	-	-	-	-	14
	C	-	1	5	-	1	-	-	7
Guysborough	A	10	4	70	-	2	-	2	88
	B	-	1	18	-	-	-	-	19
	C	4	2	12	-	-	-	-	18
Halifax East	A	6	9	146	15	1	-	25	202
	B	-	2	34	6	-	-	12	54
	C	2	3	37	1	3	-	4	50
Halifax West	A	2	36	240	44	21	-	38	381
	B	-	-	74	3	-	-	12	89
	C	1	6	86	8	1	-	2	104
Hants	A	-	3	239	10	1	-	-	253
	B	-	4	59	7	-	-	-	70
	C	-	12	76	-	-	-	-	88
Inverness	A	-	5	211	4	1	-	1	222
	B	-	-	40	-	-	-	-	40
	C	-	5	97	-	-	-	-	102
Kings	A	2	25	176	2	1	-	-	206
	B	-	16	34	-	-	-	-	50
	C	-	11	86	-	-	-	-	97

TABLE 26 (continued)

A—Offences known or reported;

B—Number of persons charged;

C—Warnings issued

District		L&F Act Part I	L&F Act Part II	L&F Act Part III	Parks Act	Beaches P & P Act	Snow Vehicles Act	MBC Act	Totals
Lunenburg	A	5	52	395	14	25	-	9	500
	B	-	7	53	6	-	-	4	70
	C	2	12	68	3	1	-	-	86
Pictou	A	-	12	446	26	10	-	1	495
	B	-	3	30	19	-	-	1	53
	C	-	3	15	84	-	-	-	102
Queens	A	3	12	34	3	-	-	-	52
	B	-	2	8	-	1	-	-	11
	C	-	6	21	-	-	-	-	27
Richmond	A	8	20	92	8	7	-	13	148
	B	-	-	25	-	-	-	2	27
	C	-	11	34	6	6	-	-	57
Shelburne	A	28	3	89	-	2	-	14	136
	B	-	-	20	-	-	-	8	28
	C	2	-	42	-	-	-	-	44
St. Marys	A	-	-	83	-	-	-	7	90
	B	-	-	14	-	-	-	1	15
	C	-	-	20	-	-	-	6	26
Victoria	A	7	2	190	5	-	-	1	205
	B	-	-	44	-	-	-	-	44
	C	2	2	74	2	-	-	-	80
Yarmouth	A	8	8	145	7	11	-	9	188
	B	1	4	18	-	-	-	-	23
	C	2	2	4	4	3	-	-	15
TOTAL	A	91	236	4,018	165	95	-	210	4,815
	B	1	44	612	53	1	-	45	756
	C	16	82	764	108	15	-	12	997